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Coffee and Milk.

Dr. D. A. Caron, of Paris, has recently been engaged in investigating the effect of breakfasting on this favorite beverage, and from the results, he thinks that he is justified in asserting that most of the nervous and allied disorders which affect the dwellers in large cities are traceable to this source. He further informs us that when the coffee is mixed with milk, its nutritious properties are neutralized because of its fermentation being retarded. Coffee and milk in a bottle were twenty-seven days before they began to decompose, whilst milk and sugar were only three days. It is evident that the astringent properties of the coffee hinder the digestion of the milk; and, at the same time, the caffeine (or active principle of coffee) is set free, and acts on the membrane of the stomach in the same manner as vegetable alkalies, producing most disastrous consequences to the digestive apparatus. He tried many experiments on himself and friends, and found that in a few hours the pulse was lowered from 80 to 68, from that it went down to 56, when he took some food, and it immediately rose to 72. He concludes by informing us that many cases of irritation, nervousness and hysteria have been entirely cured by a gentle course of tonics, and giving up the use of coffee.

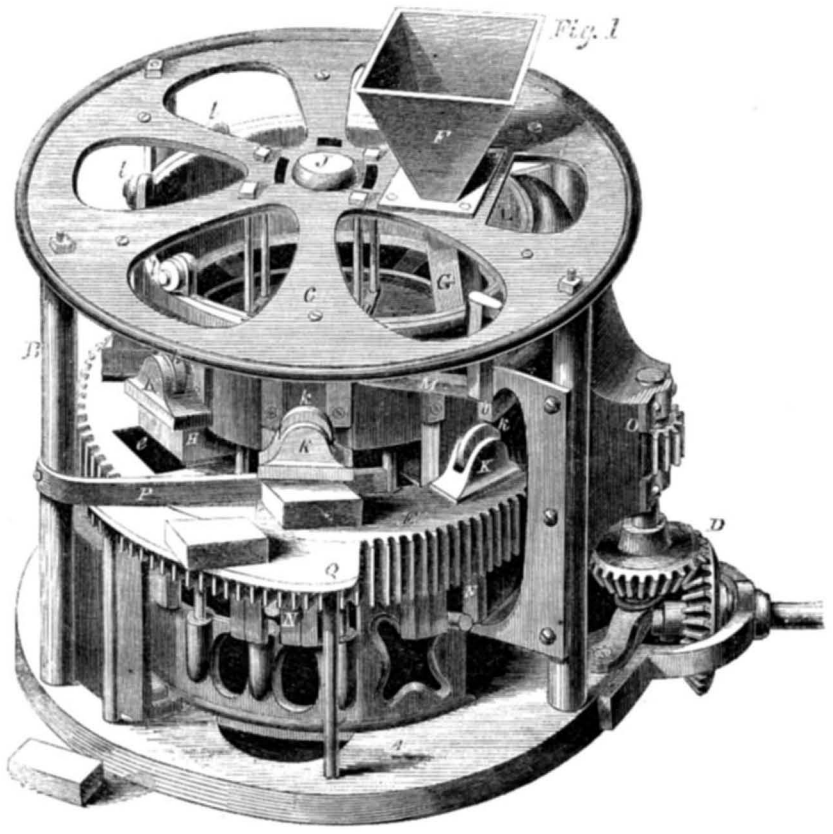
Improved Brick Machine.

This machine is intended to make bricks from dry clay by pressure, and the various mechanical contrivances of which it is constructed are designed to feed exactly the proper amount of clay into the mold, and to give it a slow, steady pressure from the top and bottom simultaneously. Various thicknesses of bricks can be made in one machine, and a large one, operated by two horses attached to a twelve foot lever, will make sixty bricks per minute.

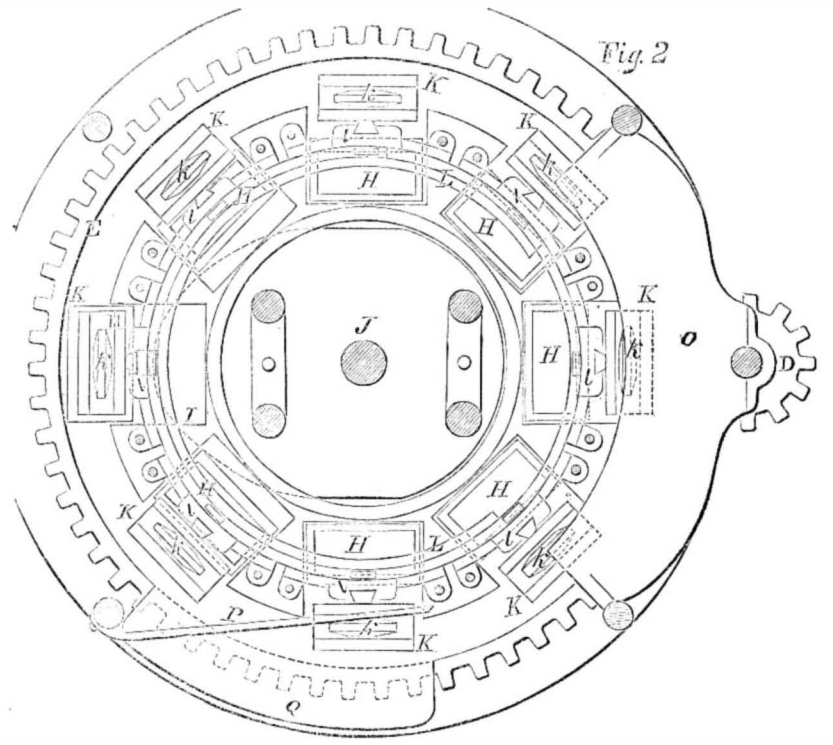
Fig. 1 represents a view of the machine, and Fig. 2 a top view of the same with the upper cover or frame removed. The same letters of reference indicate similar parts in each. A is the bed plate, B the standards, and C the top of the machine. D is the gearing which gives motion to the whole. E is a large wheel, in the rim of which are a number of rectangular perforations, *e*, exactly the size of the brick to be manufactured. J is the central shaft of the machine. Having now given an outline of the principal parts, we will proceed to describe, first, the feeding device, and then the press or brick-making apparatus.

The feeding device consists in the hopper, F, and spout, G, into which the dry clay is placed; from this it falls into rectangular boxes, H, (Fig, 2) having no top or bottom. These have small bars attached to their backs, having on them studs that work in a groove in the cam wheel or eccentric, I (shown by dotted lines in Fig. 2); this eccentric is fastened to and suspended from the upper frame work, and the boxes moving round it are pushed out over the mold, *e*, when the two plungers are farthest apart, and so delivers the clay into the mold, and are brought back when the plungers begin to be compressed on the mold. The brick-making device is very simple and perfect. There are a series of

JAYNE'S BRICK MACHINE.



plungers, K, on the top, each provided with a friction roller, *k*, and are attached at the back to an inner metallic circle, L, by means of a little wheel, *l*, travel over an inclined track, M. There are also a corresponding number of bottom plungers, N, one for each mold, which work in slots in the reverse direction to the top plungers, and so arranged that they separate and meet in union. The yolk, O, is a heavy casting, as strong as possible, and having its edges turned in as seen at *o*, Fig. 1, and these incline towards each other forming



a circular inclined plane on which the bottom plungers, N, and under which, the top plungers, K, have to travel.

The operation is as follows:—The gearing, D, is turned, and the clay filled into the hopper, F, from which it falls into the boxes, H, and from them into the holes or molds, *e*; they with their plungers, N and K, pass under the inclined edge of *o*, and so a gradual but powerful pressure is given them; the pressure is sufficiently slow to allow the air to perfectly escape, and powerful enough to make a perfect brick. The plungers then rise, thus forcing the brick into the rim of E, where it meets with the guider, P, and that pushes it in to the platform, Q, from which an assistant takes the bricks to the kiln to be baked. The process is continuous, and a most perfect brick is turned out. Any power can be used, and any number of bricks made in the machine.

It is the invention of Joseph W. Jayne, and was patented by him on the 5th of May, 1857. For further information, address the inventor at Philadelphia, Pa., or Wm. B. Betts, St. Louis, Mo.

Californian Ingenuity.

The Mechanics' Fair which we announced as the first to be held in the Golden State, was a decided success industrially and pecuniarily. The show of articles was in every way creditable, and the receipts amounted to $19,275 against expenses of about $11,000. The following is given as a list of California inventions, many of which were the result of much experiment and ingenuity:—

Breech-loading gun; beam engine, driven by weight; bridge models; brick-making do.; coffee-pot; can, non-evaporating; cooperage machinery; elastic hose; fly-killers; fire and steam regulators; gas and gas works; graduating bit; gear-cutting machine; lard lamp; locks; lamp reflectors; mineral oil, from schist; meat chopper; neutralizing valve slide for steam engines; ox shoes, improved; planing machine; quartz crusher, togglejoint; quartz machine; rifles, double-barrel; self-coupling for cars; soap, from soap-root; self-opening and shutting gate; sluice-forks; stoves and piping; safe-locks and alarm safe; sash balance; specie boxes; steam alarm; telegraph, spiritual; vaccinator; wind-mills; washing-fluid; water elevators; yacht rig, improved.

The Breech-Loading Rifles.

The Secretary of War has decided that the report of the Board for the trial of breech-loading rifles at West Point is not conclusive in favor of any one of them as a standard government gun; nevertheless he proposed to give General Burnside a contract for 1,000 of his rifles at the liberal price of $40 each. This would cover one half of the "Breech-loading Rifle Fund," the remainder to be distributed among the other competitors in the order of merit reported by the Official Board.

General Burnside declines the contract, and the whole sum, between $70,000 ond $80,000, will now be equitably divided in contracts among those of the competing inventors whose rifles seem best adapted to government service.

Our readers will find the report referred to in No. 7 of our present volume.

The Minie Rifle Ball.

The weight of the Minie ball is about one and a half ounces, and the weight of powder for the charge about one-tenth as much. The cartridge is so constructed that, encased in paper, and greased by dipping it in tallow, it slips easily into the barrel till it arrives at the charge. In this respect, the Minie has greatly the advantage in saving of time and labor of forcing down the ball with the ramrod. These balls have a range of ten hundred to twelve hundred yards, with an elevated "back sight" perfectly within the command of the marksman, and just as easily used as any short range or point blank shot.

ARTIFICIAL WHALEBONE.—Edwin Young, of Philadelphia, has sent us some excellent specimens of prepared ratan, which seem to possess all the useful properties of the whalebone.

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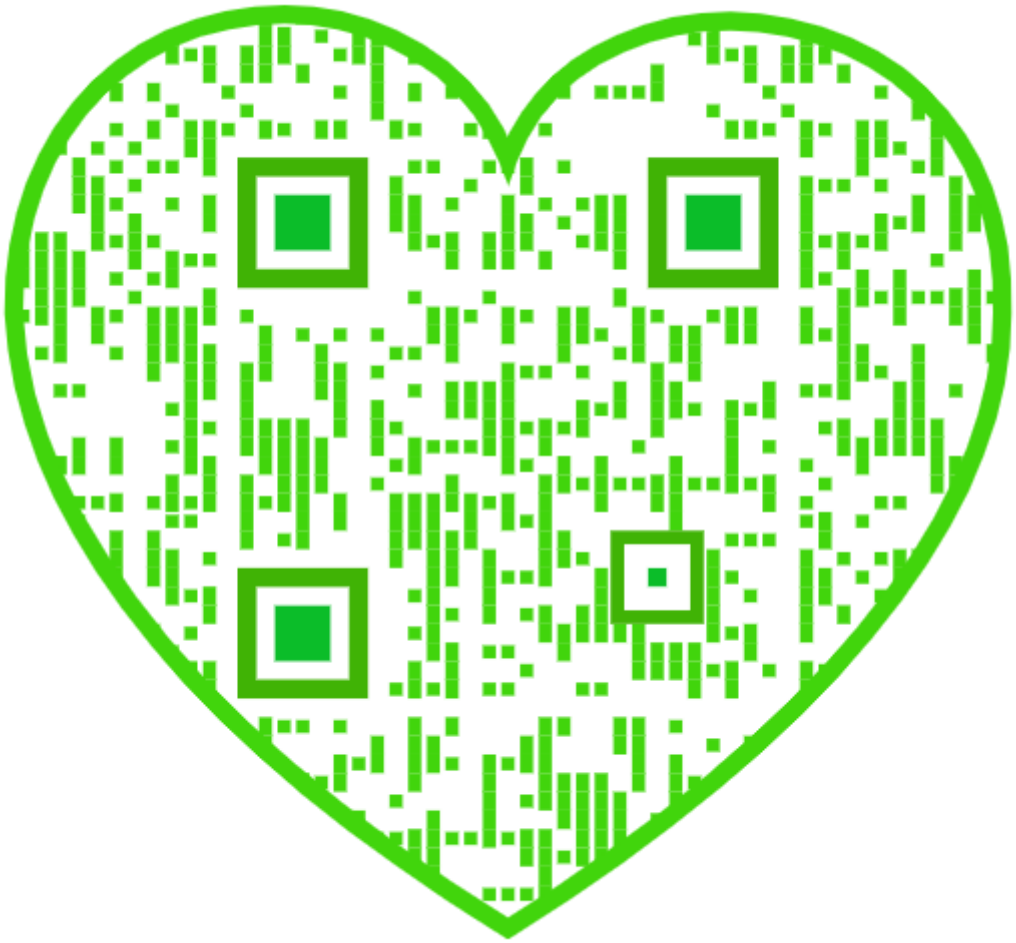

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 10, 1857.

[*Reported officially for the Scientific American.*]

PROJECTILES—Henry Bates, of New London, Conn. I do not claim the attachment to a projectile of a tail, to be inserted with it into a gun, and to be extended after leaving the gun, as I am aware that tails of such character have been applied to gun harpoons for whaling purposes.

I claim first, the employment of a tail, consisting of a spiral spring or coil of wire applied to the bomb or other projectile, as and for the purposes set forth.

Second, Securing the fuse in the fuse tubes of the bomb, by bending the said tubes after the insertion of the fuse therein, as described.

[This improvement will be found described in another column.]

FORMING ROUND TENONS ON WINDOW BLIND SLATS—Thomas C. Ball, of Keene, N. H. : I do not claim the combination of machinery for pricking the staples' holes and forming the journals and shoulders.

But I claim the arrangement and combination of sliding shoulder cutters or their equivalents, and sliding tubular journal cutters, to operate together, substantially as specified.

SAWING MACHINE—Harvey Brown, of New York City : I do not claim a saw or band running over pulleys, without reference to its construction and operation.

First, I claim the ways, H, constructed substantially in the manner and for the purposes as set forth.

Second, I claim the arrangement of gearing for the purpose of moving the carriages, I I I I I, on the ways, H, substantially as set forth.

Third, I claim the pulley, g, with its appendages of the pawl, h, and ratchet wheel, r, in connection with the projection, i, and the dogs, f, by means of the cords or chains, k, substantially in the manner and for the purposes described.

I do not claim the projection, i, the dogs, f, or the chains, k, separately, as they are not new, and may be altered in their form in my mill, and so used in connection with the pulley, g, and its appendage, which is my claim, as above.

Fourth, I claim the entire arrangement of my mill, by which a series of carriages are brought forward on endless ways to an endless saw, and each log upon its carriage being accurately set as it passes the projection, i, and thereby securing accuracy, rapidity and efficiency, substantially in the manner and for the purposes set forth.

CORN HUSKER—Joseph Cawthra, of Rochester, N. Y.: I claim the grooved rollers, l k, saw wheel, 4, and endless apron, p, in combination with the husker 2, grating 3, and curved tooth fan, 1, the whole being constructed as set forth.

DETERMINING APPROXIMATE LATITUDE AT SEA—Edward Cavendy, of New York City : I claim the described method of determining approximately the zenith of the observer, under the circumstances set forth.

EARTH-MOVING MACHINE—John Cowdon, of New Orleans, La. : I claim the combined arrangement of the gear wheels, 3 4 5 6 7 8 9 10 11 13 13 14 15 and 16, and pulleys, 17 18 19 20 44 45 and 46, and the chains or cords, f h and J, all arranged on the shafts as represented, or substantially the same, and for the purpose of giving and regulating the forward motion of the machine and movement of the elevators, in the manner and for the purposes mentioned.

I also claim the construction of the elevators by dividing them into three, more or less, pieces, and arranging the pieces, 31 32 and 33, to the chain, 26, and hook pieces, 34, as specified and represented, or substantially the same, for the purpose of causing them to expand or spread for freeing the dirt from the elevators, when being discharged, in the manner and for the purposes specified.

I also claim the combination and arrangement of the parts with, and employed for carrying the end of the conveyor frame, consisting of the carriage, P, cord, o, and pulley stake, 59, friction rolls, 30 30, and driving pulley, 50, or substantially the same, operated in the manner and for the purposes specified.

I also claim the combined arrangement of the shaft, 37, nut, 38, wheel axis, 39, with the frame-work, 41, as represented, for elevating and lowering the rear end of the frame of the machine preparatory for steering and giving the machine direction, as specified.

DISTRIBUTING APPARATUS IN FLOURING MILL—James M. Clark, of Lancaster, Pa. : I do not wish to be understood to claim a double series of spouts and valves, as that has been done before.

But I claim the adjustable or hinged spout or series of adjustable or hinged spouts, as described, for the purpose of rejecting, mixing, separating, re- olting, or regrinding and re-bolting any portion of the lower grades of flour, as set forth.

Second, I claim the combination of the adjustable or hinged spout, or series of adjustable or hinged spouts, with a single series of slide valves or valve, the circular division, y, the conveyor, J, and scraper, N, as set forth.

HOISTING APPARATUS FOR BRICKS, &c.—John Crawshaw, of Rochester, N. Y. : I claim elevating articles within a vertical trunk by means of the mechanism shown, or any equivalent device, so that the articles will be raised with a continuous motion within said trunk.

I further claim the reciprocating plunger, C, clamps, I I, and arm, n, operated by the cams, E G J, or their equivalents, and used in connection with the dogs, M, the whole being arranged to operate conjointly as and for the purpose set forth.

[For more information about the above we refer to a notice on another page.]

PULLING BEANS—Justus Day, of Murray, N. Y. : I claim the movable head, arranged and operated as described, for the purposes set forth.

RAILS FOR RAILWAYS—Timothy Dwight, of New Haven, Conn. : I claim the rail with its flanch or flanches, in combination with the sill adapted to fit the lower part of the rail, as described ; and these I also claim in combination with the screw bolt and nut, as described.

ATTACHING STEAM GAGES TO LOCOMOTIVE BOILERS—J. L. Eastman, of Boston, Mass. : I claim interposing between the gage and the boiler the elastic cushion or spring, so that the jar or vibrations of the engine shall not be transmitted to the gage, as set forth and described.

[This invention consists in the intervention of a spring box and flexible tube between the steam gage and boiler of a locomotive, so that it will not be affected by the shaking of the engine when in motion.]

HOLDING MUSIC, &c.—André Adolphe Gaget, of Paris, France : I claim the construction and employment of the hooks, D, and holdfasts or braces F, in connection with the back, A, for the purpose of binding together the music manuscripts, and other loose papers, substantially as described.

SEEDING MACHINES—Albert Franklin, of Genoa Cross Roads, Ohio : I claim the combination of the wedge-shaped or triangularly-formed discharge openings, h i, of the hopper, C, with the similar shaped cells, m n, in the feed cylinder, B, arranged for operation in the reverse directions to each other, and the several cells in each circular row of said cylinder, forming through a continuous opening, by means of channels, Z, connecting the apex of the one cell with the base of the other, for the purposes set forth.

STOVES FOR BURNING TAR, SAW-DUST, &c.—Samuel Fisher, of Canton, Mass : I do not claim combining with a fire pot or place and air flue or chamber for air to pass through and over the fuel, when the fire pot or chamber has a grate, and a current of air passing up through the grate and the fuel on the same, for in my stove there is no grate, and an upward current running through the entire mass of fuel would consume the fuel too fast, and render the stove liable to explode.

But I claim an improved stove of the kind and for the purpose as described or as constructed, not only with a fuel chamber, without a grate or air passage or passages through its bottom, but with an air chamber, arranged in front of the chamber of combustion, and made to communicate therewith and the external atmosphere and the side flues, whereby air can be supplied laterally to the chamber of combustion, and made to pass over the same, and down into the flues, such air not only supporting slow downward combustion of the fuel, but serving to create draft down the flues, so as to carry off the smoke and combustible gases, and prevent explosion of the stove.

FRUIT GATHERERS—Firman Goodwin, of Astoria, N. Y. : I claim the frame, A, formed of the elliptical and annular rims, a b, and socket, B, the socket having an oblique position relatively with the frame of the outer, a, having the bag, D, attached, and the rim, b, provided with the projections, c c, and openings, d d, as and for the purposes set forth.

[A peculiar shaped metallic ring is set in a handle, and has a bag fastened to it, for the fruit to drop in, and it forms a simple and useful fruit gatherer.]

WATER-PROOF SOLES AND HEELS FOR BOOTS AND SHOES—Benjamin D. Godfrey, of Milford, Mass. : I do not claim making a heel separate from a sole, as this is common to leather shoes.

But I claim the employment of a cast heel of india rubber with an entire sole of rolled or sheet rubber, substantially as set forth, as an improvement in the manufacture of rubber shoes.

CORN HUSKER—Samuel A. Gould, of Seneca Falls, N. Y. : I claim the trip lever, E, in combination with the lancet-shaped knife, D, the guide, C, and the slotted lever, B, the whole being constructed and operating as described.

SPRINGS FOR MATTRESSES, CHAIRS, &c.—William Hersee, of Buffalo, N. Y. : I claim supporting or maintaining the spring, A, in a proper vertical position upon the slat, C, by means of the guide pin, B, secured within the spring by means of the head, a, and block, b, the lower end of the pin being fitted, and working in or through the socket, D, in the slat, C, as and for the purpose specified.

[Guide pins are fastened into the slats to prevent the spring from warping ; they are placed in conical blocks, and slide through slots or sockets inserted in the slats.]

COOKING STOVES—James R. Hyde, of Troy, N. Y.: I wish it distinctly understood that I do not broadly claim so constructing a stove that heated atmospheric air can be admitted at the same, or at different times, into the fire chamber at different places above or beyond the fuel, from one or both of two separate air-heating chambers, by the use of the dampers by which the admission of cold air into such air-heating chambers is controlled, for the purpose of promoting the combustion in different parts of the fire chamber of the gases evolved by the burning fuel.

I claim the arrangement of the hot air chambers, A B and C, the chambers, A and B, being so constructed that the air can be admitted to or excluded from them, entirely independent of the chamber, C, by means of the registers, c and E, and being provided with apertures, a and b, in the manner and for the purpose specified.

CULTIVATORS—David E. Hall, of Abington, Ill. : I am aware that cultivators have been previously devised, in which shares have been so arranged as to allow a certain degree of lateral movement ; but I am not aware that shares have been arranged and applied as shown, to admit of the two movements described, and rendered capable of being adjusted with such facility.

I therefore do not claim, broadly and separately, the adjustable shares, irrespective of the arrangement shown and described.

But I claim the attaching of the shares, P P, to the bars, I I, which have their back ends pivoted in the pendants, H H, and their front ends fitted in the pendant slotted bars, J J, which are attached to the sliding bar, K, the bar, K, being operated by the treadles, M, to give the lateral movement to the shares, and the bars, I, used vertically by the treadles, N, to give them their vertical movement, as described.

I further claim the cutters, Q, pivoted to the bars, o, and over the plates, R, and connected to the rods, l, the whole being arranged as shown for the purposes specified.

[By giving a lateral and vertical motion to the shares under control of the person guiding the cultivator, it is enabled to follow the sinuosities of the furrows ; and it also has cutters attached, for cutting up stalks or weeds that may be in the way.]

TURNING SPIRAL FORMS—John C. Hintz, of Cincinnati, Ohio : I do not claim the oppositely-rotating cutters as new in themselves.

But I claim, first, in combination with the adjustable screw-cutting lathe, the described construction and arrangement of the gravitating frame, L, and concentrically and oppositely rotating cutters, K K′, whereby the latter are made to cut in unison, and always over a point in the axis of the piece, in the manner and for the purposes set forth.

Second, In this connection I claim the pair of finishing bits, z z′, operated automatically by means of the screw stem, 1, ratchet wheel, 2, tappets, 3, and spring pawls, 4, as described.

Third, In combination with the adjustable screw-cutting lathe, rotary cutters and gravitating frame, as aforesaid, I claim the described construction and arrangement of the roller, q, and bracket, p, whereby (the brace, O, being disconnected) the said cutters may be vibrated in a (substantially) horizontal plane, at any desired angle to the stuff, for the production of spiral or oblique flutings on a prismatic post, as explained.

FEEDING PAPER TO PRINTING PRESSES—Richard M. Hoe, of New York City : I do not claim feeding sheets of paper to printing presses and analogous machines by means of a feeding cylinder, in connection with a series of endless belts or tapes, and a drop roller, for such device is well known, and in common use.

But I claim giving the drop roller, F, a constant or regular speed, corresponding at all times to that of the other running or working parts of the device, by bringing said roller, F, when in an elevated position, and detached from the cylinder, D, in contact with the impelling roller, O, actuated by the belts or tapes. K, as and for the purpose set forth.

[This is described on another page.]

PATTERNS FOR CUTTING OUT THE UPPERS OF BOOTS AND SHOES—W. W. Merriam, of Oswego, N. Y. : I do not lay any claim to the extension pattern, which can be operated in such manner as to produce the various sizes of patterns.

But I claim the method described of operating the sliding parts of an extension pattern, so as to adjust the same not only to different sizes, but also to change the proportions of the several sizes at pleasure, without regard to the whole, as set forth.

LIFTING JACK—Lucius J. Knowles, of Warren, Mass. : I claim the loose collar, C, having a series of teeth arranged upon its inner face, in combination with a screw head, D, carrying a drop clutch, when arranged and operating in the manner and for the purposes as described.

SPRING HINGE—John Maxson, of De Ruyter, N. Y. : I claim one or more springs acting against an inclined plane curved or otherwise, with a recess at the end so arranged as to close and hold a door, substantially as described.

I also claim, in combination with the above, a coiled spring, so arranged as to assist the feather spring or springs, substantially in the manner described.

GRAIN DRILLS—Joseph Ingils, of Fayette County, Ind. : I am aware that a seed slide has been operated from a zig-zag wheel, and caused to draw or force the grain to the exit ; this I do not claim.

But I claim, in combination with the cells G, the feeding blocks, P, vibrating in said cells, and provided with recesses, S, for catching and forcing the grain to the exit openings, as described.

FIRE PLUGS—Lucien Moss, of Philadelphia, Pa. : I claim the arrangement of the fire plugs, so that a gas pipe may be introduced within the metallic or other non-combustible casing surrounding the water pipe, or plug proper, said gas pipe being so arranged with openings or burners that the flame and heat produced thereby, caused by the gas flowing from them, being ignited may be made to act upon the water pipe, and cause the water therein to be thawed, if it should, by accident, or from neglect, have become frozen, or to produce within the metallic or other non-combustible casing, a temperature that will prevent the water in the plug proper from becoming frozen during times of extreme cold.

PLOWING MACHINES—Henry Moeser, of Pittsburgh, Pa. : I do not claim, broadly, the operating of a gang of plows on an endless chain, transversely or obliquely to the line of draught.

But I claim, first, The arrangement and combination of the transverse beam, F, connecting links, a a, chains, H H, driving pulleys, K K, pulleys, J J′, and wheels, G G, or any other equivalent devices, when operating in relations to each other and to the steam carriage, as set forth and for the purpose described.

Second, The arrangement of the guiding bar, N, supported on the transverse beam, F, and the forks, f f, on the plow carriages, or any other arrangement substantially the same, for the purpose of guiding the plow carriages, as described.

CUTTING BREAD—James Naughton, of Cincinnati, Ohio : I claim the arrangement of the swinging plate, h h, gage plate, g, and set screw, C, when arranged with the spring, 5, and curved lever, J K, for gaging the thickness of the slice of bread cut, and discharging it from the machine by the action of the lever, f f, on the curved lever J K, all as and for the purposes specified.

PROTECTING TREES FROM CANKER WORMS, &c.—A. T. Nute, of Roxbury, Mass. : I claim my improved method of protecting a tree from the ascent of canker worms, the same consisting in applying finely pointed metallic wires or one or more strips of card teeth to the same, substantially as described.

BULLET MACHINE—Wm. H. Ward, of Auburn, N. Y. : I claim, first, Arranging the feeding clamp and mechanism for operating it, in such a manner that the limit of the backward motion remains unchanged, while the forward motion is regulated by the amount of wire required to form the blank as set forth.

Second, The combination of the adjustable stop, k, the wire, and the mechanism for carrying the wire forward, for the purpose of regulating the length of the feed, without changing the limit of the backward motion of the feeding mechanism.

Third, The method of regulating the size and density of each blank before it is severed from the wire by means of a pair of compressing forceps, or their equivalent.

Fourth, The employment of two pairs of cutting and grasping forceps, or their equivalent; for dividing the wire, so arranged and operated as to grasp the wire as described, and sever it between their adjacent faces.

Fifth, The combination of the oil box arranged as described, with the cutting forceps, for the purpose set forth.

Sixth, The combination of the discharging collar, with the punch, and the mechanism for opening the dies, for the purpose of releasing the bullet from the dies, and discharging it from the machine.

Seventh, Arranging the joint between the two pair of forceps, so as not to be in the same plane, for the purpose set forth.

Eighth, Arranging the groove around the cavity in the die as described, so as to allow the air to escape from the die and prevent the passage of the lead into the groove.

Ninth, Making the opening in the die of less diameter than the base of the bullet, and of the exact size of the blank, for the purpose set forth.

Tenth, The method of gaging the blank, and forming the base of the bullet by means of an annular projection in the base of the die.

Eleventh, The method of forming bullets of variable weight and of the same external form, with the same set of dies and punches, by constructing the die with a projecting annular base, so that the punch can be entered into the blank a greater or less distance, and thus expand the recess in the base of the blank, so that it will accurately fill the die, and thus form a perfect bullet.

PRINTING PRESSES—Stephen Wilcox, Jr., of Westerly, R. I. : I claim, first, The adaptation of the eccentric segment, B, to the stationary bed, A, when said segment is held to the bed by radius bars, C C, and operating substantially as set forth.

Second, The elastic fly bending round the platen and operating as described.

HUSKING PALM—D. E. Shaw, of Ross County, O. : I do not claim a husking peg to be worn across the inside of the fingers.

But I claim the husking palm, to be used on the palm of the hand for husking and breaking off the butts of corn, constructed and operating substantially as described.

INSTRUMENT FOR SURVEYING AND CALCULATING AREAS—J. M. Lilley, of Greenville, Va. : I claim the combination of three scales, A, B, C, and quadrant, E, as used for the purposes already set forth.

PLOWS—Horatio Stanley, of Green, Pa. : I claim the construction of the plow frame, with the rollers, as described, and so constructed that any number may be attached to the same axle-tree by means of the frame, Fig. 2, constructed as described, or any other substantially the same.

GRINDING MILL—Charles Tripp, of Ann Arbor, Mich.: I do not claim a burr formed of a series of saws for grinding, for such device has been previously used, and although perhaps preferable thus constructed is not absolutely necessary in my improvement, as burrs constructed in other ways, and of a different material, such as stone, may be used with success.

But I claim the adjustable rests, G, placed between the projections, e, and the plate, C, constructed substantially as shown, and provided with the discharge throats, I, in combination with the burr, F, it being understood that I do not confine myself to the ring, H, and other parts shown and described, for adjusting the rests, G, but claim such means or any other means arranged to effect the same purpose.

[A notice will be found on another page.]

WINDOW SASH—Francis Thrasher and H. B. Horton, of Akron, O. : We claim the locking friction strip, for the purpose of raising the window with ease, and sustaining it at any height, substantially as set forth.

CLAMP FOR CENTERING HUBS FOR BORING—John Thrasher, of Avon, N. Y. : I claim the combination of the vibrating arms, I I, links, J J, and screw, L, constructed and arranged substantially as described, for the purpose of centering and holding the hub while it is being reamed or bored and reamed.

LAST HOLDERS—A. J. Tewksbury, of Haverhill, Mass.: I claim the ball and socket joint, A and E, in combination with the spring bolts, B and G, substantially as set forth and for the purpose specified.

GENERATING ANHYDROUS STEAM—Wm. M. Storm, of New York City : I claim the arrangement of means substantially such as set forth, for rendering steam anhydrous, without the exposure of the tubes or drying vessel to the direct action of the fire or hot products of combustion.

REVOLVING SNOW EXCAVATORS FOR RAILROADS—J. Urmy, of Wilmington, Del. : I claim, first, The obliquely set side paddle wheels, CC, whose axis lies in a plane, vertical to, and at right angles with the track and diverges downward from a point over the center of the track, and whose arms, radiating in a plane at right angles with said axis, have upon their extremities edged or toothed paddles, e e, so arranged as that each one shall, when at the lowest point of the plane in which it revolves, be in a horizontal plane and oblique to the rail of the track, substantially as and for the purposes set forth.

Second, The central paddle wheel, E, revolving in a vertical plane at right angles with the track, in combination with the obliquely set side paddle wheels, C C, the whole arranged substantially as and for the purpose described.

SUB-SOIL PLOWS—John Wood and Reuben North, of Rochester, Wis. : We are aware that a sub-soil attachment to plows is very common ; also, that a thin, fixed blade has been arranged under the bottom of the surface plow, therefore we do not claim such attachment as our invention.

But we claim the combination of the auxiliary or sub-soil share, and its adjustable standard, with the adjusting lever and its attachments, when the whole is constructed and arranged in the relation to the main share and beam, as described, and for the purpose set forth.

[A full description, with an engraving, will be published in the SCI. AM. in a few weeks.]

MACHINERY FOR DRESSING WARPS—Saml. Campbell, of Whitestown, N. Y., assignor to John C. Whittier, of Northbridge, Mass. : I claim the method of dressing warps by means of brushes above and below each section of yarn, said brushes being alternate in their movement, and constructed to come in contact with, and leave the yarn gradually by the mechanism described, or any other substantially the same.

LATERAL FEED MOTION FOR SAWING MILLS—K. R. Olmstead, of Chicago, Ill. : I claim the combination of a lever and cam or eccentric with an inclined plane, set rod, wheels, and racks, constructed, arranged and operated substantially in the manner and for the purposes set forth.

DIGGING PLOWS—Ezra Peck, of Deer Park, N. Y. : I wish it to be understood that I do not claim a rolling cylinder with either straight or curved teeth, as this has before been used, but I am not aware of any tooth having before been constructed and shaped in the manner shown so as to enter the earth with only a very small expenditure of power as the cylinder progresses.

I claim the coulter, g, and its horizontal shear, 7, in combination with the cylinder, k, of teeth, l, the whole constructed and acting substantially as specified.

HARNESS BUCKLES—John Prendergast, of Boston, Mass. : I do not claim a buckle formed with a bridge for support of its tongue, when the front end of the tongue is arranged with respect to the body of the buckle as above specified.

But I claim in constructing a buckle with a supporting bridge for its tongue, and with the end of its tongue bent upward as specified, is forming such tongue with a recess or shoulder, b, in order that the strain on the tongue may be so borne by the body of the buckle as to relieve the joint of the tongue from the strain and wear thereof that would result therefrom.

SIGNAL LANTERNS—J. R. Pierce and Leavitt B. Austin, of Oswego, N. Y. : We claim the combination of a traversing chimney and lamp, so arranged as to avoid the bad effect of the lamp's smoke in signal lanterns in the manner set forth.

SEEDING MACHINES—Ephraim Russell, of Coatesville, Pa. : I claim, first, The combination of the screw friction clutch with the cam wheel, in the manner described.

Second, The adjustable jointed conveyor spouts when constructed in the manner and for the purpose specified.

PROTECTING TREES FROM CANKER WORMS, &c.—P. C. Rowe, of Boston, Mass.: I am aware that for such purposes an encircling plate or roof has been applied around the trunk of a tree ; also, that cotton batting or loose fibrous material has been wound around and fixed to the body of a tree, consequently I do not claim such means of preventing the ascent of canker worms,

But I claim my improved tree protector made as described, viz., with the encircling roof or cover of metal or other suitable material, and one or more circular or surrounding fringers suspended from the said roof and around the tree substantially as described.

HORSE SHOE NAIL MACHINE—John Wootton, of Boonton, N. J. : I claim, first, The employment of the nail rod itself as a ratchet, constituting part of a ratchet motion, by which it is fed longitudinally to the machine, substantially as described, thereby insuring infallibly a proper length of feed, and dispensing with the necessity of gages to regulate the feed movement.

Second, Giving to the punching apparatus a motion laterally to the nail rod, in addition to the longitudinal movement of the rod substantially as described, so as to produce a combined longitudinal and lateral feed motion.

[For information about this invention we refer to page 83.]

QUILTING FRAMES—H. N. Dewey (assignor to B. L. Hill & Co.) of Berlin Heights, O. : I do not claim an adjustable quilting frame as such.

But I claim the vertically adjustable arms, B B, having spring jaws for adjusting the bars, C C, as set forth.

LARD RENDERING KETTLES—Allen Lapham (assignor to himself and J. B. Bennett) of Brooklyn, N. Y. : I am aware of the patent of J. J. Bate, Oct. 21, 1856, wherein is claimed the combination of a double steam kettle, with an annular chamber, and I therefore disclaim any part of his invention.

I claim in combination with a steam kettle, a vertical hollow steam cylinder supported upon pipes, D D, as described, whereby I am enabled to concentrate great heat upon the material rendering, thereby saving fuel, and making the kettle easy of access for the purpose of cleaning, as set forth and specified.

SEWING MACHINES—E. H. Smith, of New York City : I do not claim a shuttle from which the loop of needle thread is drawn, at every stitch, as shown in the patent of Joseph Bond, Jr., of May, 1855.

But I claim the discordal shuttle constructed as set forth, and made to control the loop of needle thread substantially in the manner described and represented.

CANDLESTICKS—James Spratt, of Cincinnati, O. : I claim the method of securing a candle by the conical ferule, b, adapted within, to be drawn over the candle and tightly clasp its butt, and screwed or otherwise attached to the sconce, a, substantially as set forth.

RE-ISSUES.

PLOWS—George Watt, of Richmond, Va. Patented Dec. 9, 1856 : I claim the curved standard, with its front or concave side rounded off, and its curved surface extended to intersect the mold board along its upper edge, x x x, substantially as and for the purposes set forth.

DIAPER PINS—Joshua Heilmann (assignor to Ignatius Sturn) of New York City. Patent dated July 21, 1857. I claim the combination of the sliding curved pin, C, with the shield or case, A, substantially in the manner and for the purposes described.

SEED PLANTERS—G. W. Brown, of Galesburg, Ill.

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Patent dated May 8 1855: I claim, in combination with the hinged frames or hinge-joint, the locating of the conductor's or driver's seat in rear of the supporting axle, so that as he moves forward or back on his seat, the rear frame may act as a lever for lowering or raising the seeding part of the machine, and thus throw it into or out of the ground as circumstances may require in turning around or passing over any obstruction substantially as set forth.

DESIGN.

BAROMETER CASES—T. R. Timby, of Medina, N. Y.

A Batch of Information.

MESSRS. EDITORS:—A Polish gentleman once told me that a liquid salt (perhaps fluid borate of soda) was sold in Poland, which could be used with a brush and was employed over the whole of the inside of rooms, and rendered them completely fire-proof, in place of alum water, or solution of iron or tin.

There appears to be, a want of some article to fasten manuscripts in place of vulcanized india-rubber, which I have found to perish soon. Could not a strap of Chamois leather be easily contrived, say half an inch wide, attached to one side, and passed through an eye, similar to the elastic or French gloves?

Your article, "Steam Power versus Wind," reminded me of a conversation I had with a person in Tarrytown, who remarked, he had a freighting vessel there which made its passage almost equal to steamboats. On enquiring about her construction, I found she was built somewhat of a scow shape, drawing little water, in fact like the ice boat, working upon the surface and not displacing much water, and kept to the wind by an ingenious center board, which the helmsman can raise or depress at pleasure.

I think you are mistaken about an artificial ultramarine being produced from cobalt. The cost of the cobalt blues is more than ten times that of the average of artificial ultramarine, so much so that great pains have been taken to rid the same of the purplish hue which it has, so as to make it resemble cobalt, which, when pure, is the only pure blue color known among artists, and is much more costly for glass and porcelain pigments than any other, as I know, selling them both to consumers.

If marble is simply a carbonate of lime, why cannot it be imitated somewhat like the plaster of Paris or sulphate of lime, and in place of tedious sculpturing, why cannot cuts be made, like those of bronze? S. N. DODGE.

[Our correspondent's letter is full of varied information; therefore, we have pleasure in adding to it a few remarks of our own. The liquid glass sold in Poland is soluble silicate of soda; it is much used on the continent of Europe, and might with advantage be employed here. There is a variety of ultramarine made from cobalt combined with alumina, but the best is manufactured from alumina, silica and soda, with a little sulphur, in fact it is the artificial production of the mineral lapis lazuli.

The reason why marble cannot be very successfully imitated, is that its beauty depends upon the slowness with which it has been deposited and the pressure to which it has been subjected; we must attain some mechanical equivalents for these forces, or we shall never be able to compete with the rocks of Mother Nature, and, as yet, we do not possess them.

Effect of Saleratus on the Teeth.

Dr. S. Baker, of Portsmouth, N. H., has sent us three human teeth, one of which is perfect, another has been steeped in a solution of cream of tartar and it is slightly corroded, while the third, that has been immersed in saleratus, is completely eaten into holes. We do not, however, think this is a fair test, as we perfectly well know that in baking, it would be decomposed, and the alkali which it contains would form some less virulent compound with one of the constituents of the bread, most likely an acetate of potash, in which case the teeth would not be much injured.

Carbonate of potash or saleratus cannot be in itself so very injurious; for in Britain, where teeth are proverbially good, there is a great quantity of baking powder used, one of whose chief constituents is this same salt.

The dentists are evidently on the wrong track in trying to discover the cause of decay in American teeth, and we have an idea that were they to turn their attention to the climate and general habits of life among us, they would be nearer the mark. Let them try.

Important Patent Case.

UNITED STATES CIRCUIT COURT—SOUTHERN DISTRICT OF NEW YORK.

Before Hon. Charles A. Ingersoll, Justice.

NOV. 11.—*Alfred T. Serrell vs. Denmark P. Collins and Abijah Pell.*—This was a suit for the infringement of Letters Patent, granted by the United States to the plaintiff, Alfred T. Serrell, for a machine for making wood mouldings, in which he claims as his invention, the combination of moulding cutters with an adjustable feed ring or rings, in such relation to each other that the ring or rings shall travel in a line with the deepest cutting member of the moulding cutter and be capable of maintaining that relation under the varying circumstances of a change of form or size of moulding.

The original patent of Mr. Serrell was issued on the 16th day of May, 1848. His claim in the original patent was limited to a combination of three things: that is, the feeding device, rotating cutters, a stationary plane. He soon found that persons infringed by using only two of the three parts, that is, the feeding device and cutters, omitting the stationary plane, which was not essential to the use of the other two parts; he therefore bought suit against such alleged infringers and was defeated upon the ground that he had claimed only a combination of three things, while the alleged infringers had used only two of those things in combination, and therefore had not infringed the claim, although he was equally the first inventor of the two things alone in combination.

Mr. Serrell, in view of this defect in his patent, thereafter surrendered it and obtained a re-issue on an amended specification; and the present suit was brought upon the re-issue against the defendants for using the two parts in combination: that is, the feeding device and revolving cutters in combination.

The defendants set up in defence the Woodworth Patent and a machine stated to have been made by Horace V. Seigler and one Howe, in which a feeding roller with sharp spikes in it had been used as a feeding device in combination with cutters, before the invention of Serrell, and also, that Serrell's invention was not patentable; but the defendants failed in their attempt to maintain any of their defence, and after a severely litigated trial of six days, the jury rendered a verdict in favor of the plaintiff and his patent, and found $2,000 damages against the defendants for what they had used the invention during the time between the reissue of the patent and the commencement of the suit—leaving them still liable for what they have used it since the commencement of the suit, and also are to be restrained by injunction from further use of it. This verdict also establishes the validity of the patent.

For the plaintiff, George Gifford. For the defendants, Charles M. Keller and Peter Van Antwerp.

Mi or Cinnabar.

The first of these is the ancient and the last the modern name for the same substance, which is a mineral of beauteous shining red color, and is an ore of mercury or quicksilver. Artificially prepared cinnabar is much preferred to the native, as a pigment, because of its freedom from earthy impurities, and it has long been an object of chemical manufacture, and is generally known as vermillion. It is a compound of sulphur, with mercury, each in equivalent proportions. To manufacture it, about five or six parts of mercury are added to one of melted sulphur, and when thoroughly combined and constantly stirred, heat and light are evolved, and a violent cracking and spitting indicate the termination of this part of the process. The result is a dirty, blackish red mass; this crude product, after being pounded, is mixed with a small quantity of sulphur, this is placed in a glass flask until it is about half full, when it is closed with a charcoal stopper. The flask is then placed on a bed of hot sand (kept hot by a slow drawing furnace), and is left to remain thus red-hot for some hours, at the end of which time the cinnabar is found sublimed in the flask.

In Amsterdam, where it was first made, they still pursue a similar method to the one they have always done, but the one we have given is the essence of them all. Of all kinds of vermilion now made, the Chinese is the best, being sold for about six times the price of home made; it has a rich, almost inclining to carmine color, and no foreign substance can be detected in it, except a little glue.

At the present time we apply the term minium to red lead, which is made by roasting lead in a slow reverberatory furnace having a broad hearth so that a great surface can be exposed to the action of the heated air. It is kept continually worked up and down until the whole mass changes to the well-known color of red lead. Minium is often used to adulterate vermilion, and it is a fair supposition that the reason why our ancestors called them both by the same name was that they did not know which was which.

Supposed Meteorite.

On the 17th of June last, there fell, about ten miles southwest of Ottawa, Ill., a quantity of cinders. The weather had been showery, but there was no thunder or lightning. There appeared to be a small black cloud hanging over the spot where they fell; the larger ones were imbedded in the earth, while the smaller ones were only half buried. On the 17th of September, this year, a mass of lava "the size of a barrel," says the *Sunny South*, of Aberdeen, Miss., fell about ten miles from that place, and at the time it excited a great deal of attention for miles around. The former of these, we have every reason to believe, and we think that the appearance of the cinders point to a terrestrial rather than a celestial origin; but, we think, that the editor of the *Sunny South* has drawn upon his imagination a little and colored the facts of our first instance. We should much like to know how large the piece of lava was that fell at Aberdeen; for a piece the "size of a barrel" is very indefinite and unsatisfactory.

Sewers.

When from a little village, there arises in a few years, a large city, one of the first and most important considerations ought to be the sewerage of the place, as on this depends the well-being in mind and body of its inhabitants. No city ought to be built where there is not a sufficient fall for its sewerage, and it will be found in the plans of all ancient cities that the builders knew of this advantage, although often their waste ran through the open streets. Yet, in the history of the past, there is nothing the subject of so much praise and elegant description as a "city set on a hill," and one of its chief advantages was its facilities for getting rid of the sewerage material. In all places drains are an important consideration wherever any number of persons are congregated together, and as health is our dearest blessing, it should be first attended to. One of the most valuable means of doing so is to take care that near our dwellings, or in the places where we meet, there are no heaps of decaying animal or vegetable substances which can impair our health, or render us unfit for the discharge of our duties, as most assuredly they do.

American Breech-loading Guns.

Mr. Eastman's six breech-loading cannon, recently imported from America, were tried on the Arsenal Wharf, Woolwich, under the supervision of Lieutenant-colonel Wilmot, superintendent of government gun factories at Woolwich, and having been twice fired with a double charge of blank cartridge—namely, 20 lbs. of powder—they were examined, and found to have stood the test satisfactorily. From their enormous weight (17 tuns) they did not evince the slightest recoil.—*London paper.*

Nail Machine.

This machine punches the nails from a rod, which has been previously rolled to a peculiar shape, to produce a number of partly-formed nail blanks, of which several are arranged side by side, with their length parallel to the width of the rod. The peculiar form to which it is rolled gives it in certain parts of its longitudinal section the appearance of a ratchet, and the invention consists in employing the nail rod itself as part of the ratchet motion which feeds the machine. The invention also consists in giving the punches a series of movements back and forth to the nail rod, and a similar intermitting motion along the rod, so that a greater number of nails than the number of the punches may be cut from the width of the rod. John Wootton, of Boonton, N. J., is the inventor of this machine.

Bombs.

An improvement in these projectiles was patented this week by Henry Bates, of New London, Conn., which consists in attaching to the butt end of a bomb, or other projectile of similar character, a spiral spring or coil of wire, which, when the projectile is placed in the gun from which it is to be discharged, is compressed together, and lays close to the projectile, but when it is discharged is caused, either by reason of its own elasticity, or by the resistance of the atmosphere, to extend itself, in the form of a tail, some distance in the rear, where, by the resistance it meets with, it serves to direct and steady the course of the bomb. He has also so improved the fuse tubes that they cannot be blown into the bomb on the discharge of the gun, and so set fire to the bomb before it has accomplished its flight.

Elevator.

This invention is intended to raise bricks, stone, mortar, and other materials, to an elevation, without the use of ladders, baskets and pulleys, and the like. It consists in a hollow vertical tube the hight required, and in the bottom of this the articles to be raised are fed; one man or more may turn the handle of the crank, and by suitable and simple mechanism the contents will be raised. It is continuous in its action, and is the invention of J. Crawshaw, of Rochester, N. Y.

Feeding Paper.

Richard M. Hoe, of this city, the inventor of the celebrated printing press, has this week patented an improvement in the feeding device of cylinder presses, by giving the drop roller, or the one that pulls the paper to the type, a positive instead of an intermitting motion, depending on contact with the printing cylinder, such as it formerly had. He gives it a positive motion, independent of any other part.

Grinding Mill.

This invention employs a grinding burr or stone in combination with adjustable rests, whereby articles or substances may be ground very rapidly, and by very simple means. It is mainly applicable for grinding food for stock, although it can be applied to other useful purposes. It is the invention of Chas. Tripp, of Ann Arbor, Mich.

COMMISSIONER HOLT'S decision, as published in our last number, is attracting general attention already. We have received letters strongly in praise of its ability and liberality. It encourages inventors to set themselves to work under the conviction that their rights will be properly cared for at the Patent Office.

REMOVAL.—We regret to state that Capt. Herbert has been removed from the position of Chief Examiner in the Patent Office. He was a useful and much esteemed officer, and we sincerely hope that the causes which have led to his removal may be set aside, and he be restored again to his former position.

The highest speed ever made on the ocean was by the clipper ship *Flying-Scud*, 460 miles in twenty-four hours.

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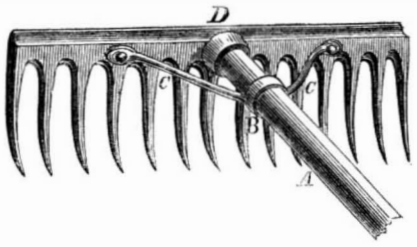
New Inventions.

Hotchkiss Rake Head.

This is a simple contrivance, and yet one of utility, for in the ordinary ferules of rake heads, the braces have either been riveted to it, or fastened by screws, and this improvement consists in casting them in one piece, thus forming a strong and cheap rake head.

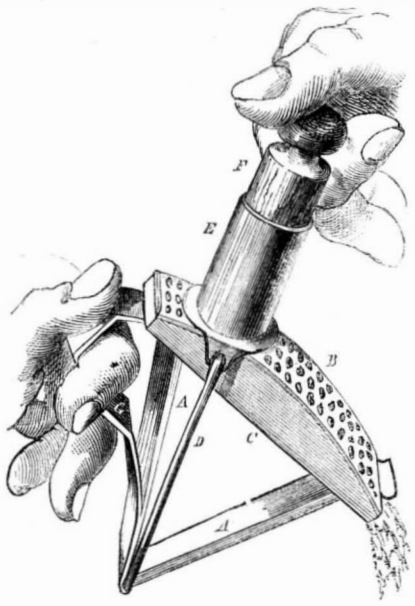


In our engraving, A is the handle, and B the ferule, with its braces, C, cast in one piece, and D is the rake, all formed of cast iron.

It was patented on the 6th of October, 1857, by its inventors, A. A. and A. Hotchkiss, of Sharon Valley, Ct., from whom all further information may be obtained, or by addressing Hotchkiss & Sons, of the same place.

Ames' Radial Grater.

This is a thoroughly Yankee invention; it is ingenious, simple, and easily worked. Our lady readers will no doubt examine its merits with care, and order their husbands to purchase one immediately. In our engraving, A A is a hemmed piece of tin bent into the form of a V, the ends of which are soldered to the under side of the segment, C, the latter forming a box for the reception and delivery of the grated material. B is the rasping surface soldered to C, and forming the exact arc of a circle. G, is th handle. D D are the radial guides, formed of a wire bent as seen in the figure, being hinged at the apex of the sector so as to swing freely backwards and forwards. The ends of the guides are soldered to the bottom of the cylinder, or holder, E, in which the nutmeg or other article is placed. F is a wooden piston, or follower, for pressing, with any desirable force, the substance to be grated against the rasping surface, B. This follower, the bottom of which is shod with a rough disk of tin, is a little longer than the



holder, E, in which it plays, being prevented from dropping out or touching the grater, by means of a short pin, projecting through a longitudinal slot in the holder, said pin and slot being so arranged that the piston may be entirely withdrawn from the cylinder whenever the operator wishes to insert an article to be grated. The method of holding the instrument in the hands and operating it is sufficiently explained by the engravings.

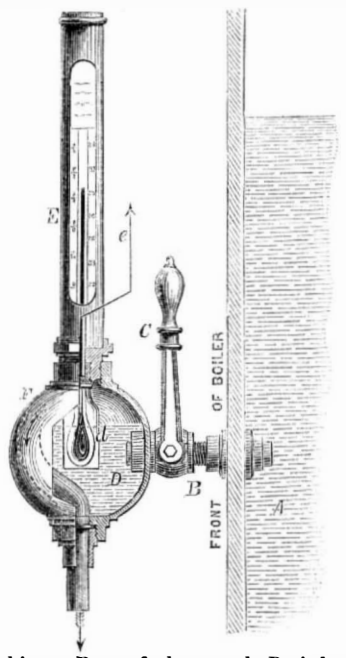
It was patented on the 13th of October, 1857, and further information may be obtained from the assignee, Edmund Brown, Lynn, Mass.

Cast iron is case hardened by first heating it to a red heat, and afterwards putting it into copperas water.

Improved Salinometer.

The salinometer is an instrument for measuring the quantity of solid matter or mineral salts dissolved in water. The one we now illustrate (taken from the London *Engineer*) is intended to be applied to a boiler, to indicate the percentage of mineral salts in the water it contains. It depends on the principle that water containing any dissolved matter boils at a higher temperature than when pure. For instance, pure water boils at 212° Fah.; a solution of alum at 220°; a solution of common salt at 224°; and one of acetate of soda at 256°; so that by arranging a delicate thermometer and properly graduated scale in connection with the boiler, it is possible to indicate the percentage of salts in the water which is being used.

In our engraving, A is the boiler, having a pipe, B, and stop-cock, C, connecting with a globe-shaped vessel, D, containing the bulb of a thermometer, *d*, properly protected from



breaking. Part of the vessel, D, is broken away, to show the interior. E is the scale, and F a waste pipe, so placed that the excess steam or water can escape, and so allow the water in D to remain at its normal pressure; that is, at the same pressure as that in the boiler.

The operation is as follows:—The handle of the stop-cock, C, is so turned as to admit the water into D, and the percentage and temperature can be read off, and the pointer, *e*, so fixed that on another trial the last one may be indicated, and a comparison instituted. Of course, the whole depends on the graduation of the scale. It is a simple and useful invention. The *Engineer* does not say whether it is patented or not.

Architectural Decorations.

The ordinary house decorations that usually have any connection with their architectural proportions are, if not of the same material as the front of the house itself, generally made of plaster or stucco. When the house is new, these answer very well, and for a short time look in keeping with the whole; but it does not take long for the weather to cause them to crack, then little bits break off, and finally the whole crumbles away. A new material has been introduced to supply the place of these friable plasters and stuccoes, which is easily moulded and can be cast into any pattern. It is basalt. There are works in Birmingham, Eng., where architectural decorations are cast from it in hot molds. The products are very firm and beautiful, and are represented as possessing characteristics of great durability. When cast in cold molds, a glassy lava termed obsidian is produced. The material generally employed is the rag-stone of the neighborhood, but furnaces are in operation for the reduction of quartz by direct fusion according to a peculiar process, in which the pulverized quartz is mixed with fluor spar, lime, and oxyd of iron, which agents combine with the silica and render the whole perfectly fluid.

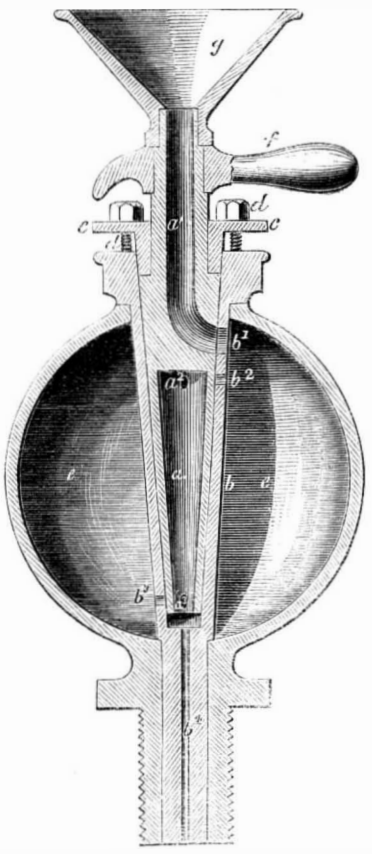
Manufacturing Coiled Springs.

This invention consists chiefly in the combination with a rotating mandrel—whose form is that of a single cone or frustum of a cone—of two or more pressing rollers, arranged and operating in such a manner as to coil a piece of wire of any length in the form of a continuous series of truncated cones, having their bases in alternate opposite directions. The wire thus coiled only requires to be cut apart, at the union of the bases of the several coniform portions of the coil, to produce a number of double or single conical springs, such as are used for upholstery, and other purposes. This is the invention of James Harrison, Jr., of this city. It has just been patented in Great Britain, and was patented in the United States January 27, 1857.

Improved Lubricator.

An invention was patented in Great Britain by Mr. Sourbut, on the 28th of November, 1856, consisting in improvements in taps or valves, by which more covering surface is given to the orifices of them than usual. In place of the passage being made directly through the plug, it is made hollow, and the liquid entering at one part, passes along, and leaves it at another part, and he usefully applies this arrangement to lubricators. Our engraving (copied from the London *Engineer*) represents a section through one of these lubricators. *b* is the casting, *a* the plug, which is kept in position by the collar, *c*, and set screws, *d*. The casting, *b*, is secured in the globular receiver, *e*, containing the fluid, which can be screwed into the cylinder head or other place that is to receive the lubricating material.

A handle, *f*, is attached to the projecting part of the plug, *a*, and a small funnel, *g*, is screwed or otherwise fixed to the end of it. The matter to be supplied to the receiver is poured into the funnel, and passes down a hollow, *a'*, formed in the center of the plug, and then out at the side of it, passing through an orifice, *b'*, in the casting, into the receiver, *e*. The plug, *a*, is in that position in which the passage, *a'*, is open for the entrance of the lubricating fluid. There are two more holes



in the casing, *b* , and b_3, and corresponding holes, a^2, and *a* , in the plug, *a*. Only one of the holes or passages in the plug, *a*, need be in communication with the receiver at the same time, and each may be brought in communication by turning the handle, *f*, to the required position. In one position the steam entering the hollow of the plug will pass through the holes, a^2, and b^2, into the upper part of the receiver; in another position the lubricating matter will pass from the receiver through the holes, a^3, and b^3, into the hollow of the plug and through the passage, b^4.

India Rubber.

Charles Goodyear, of London, Eng., has patented certain improvements in the manufacture of boots and shoes. He makes the boots or shoes of perforated sheet india rubber, and presses on them tips and heels of vulcanized rubber—the perforations serving as air channels, affording ventilation to the foot. He also has invented a new heel for boots and shoes, which is molded of hard india rubber, and making the same hollow, to receive a filling piece of india rubber sponge, or other elastic and yielding substance, which projects somewhat beyond the edge of the enclosing case, so as to form a cushion or buffer for easing the blow of the heel when it strikes upon the ground.

Distillation.

Jean Eugene D'Arcet, of Paris, has invented a new process for the distillation and rectifying of tars, resins, turpentines, bitumens, and mineral oils, so that the process may be (like that of alcohol) continuous. In a vessel divided into compartments, the substances are subjected to a gradually increasing temperature, so that the most volatile constituents are first dissipated, and so on in the inverse ratio of their volatility. Each compartment is provided with a still, and each separate product is condensed as it comes over.

Preserving Food.

John H. Johnson, of London, Eng., has patented a method of preserving food. It consists in the application of an airtight envelope or covering of gutta percha, caoutchouc, or other similar impervious material, thereby perfectly protecting the article to be preserved from the action and contact of the atmosphere. The food to be protected is immersed once or oftener in a liquid formed of the above materials. This invention was patented in the United States by C. Van Vleck, Macomb, Ill., June 30, 1857.

How to make Ivory Soft.

Ivory, which has become friable by age, may be made to recover its original goodness by boiling it in a solution of gelatin for some hours. It may be made soft and translucent by laying it in phosphoric acid of moderate strength, drying it in pure linen, previously rinsing it in water. When dry it is translucent and hard, but will soften on being dipped in warm water and milk. The time of immersion in the acid differs in different pieces of ivory, and if certain parts are to retain their original character, they should be covered with a varnish before immersion.

Death of an Inventor.

John Lane, Senr., the inventor of the steel plow, died at his residence in Lockport, Ill., on the 5th of October, after a brief illness. Mr. Lane emigrated to Illinois in 1833, and in that year invented the steel plow, which is now in general use throughout the West. The value of this invention to the country cannot be estimated. The name of John Lane, Senr., should ever be remembered as one of the great inventors of the country; and in the West, especially, his memory will ever be cherished as one of its benefactors. He was 65 years of age at the time of his death.

Windmills are becoming great institutions in San Francisco. They are being extensively employed for pumping up water, propelling the shaft of the machine shop, turning the burr-stones of the flouring mill, &c. The weather there is peculiarly adapted to the windmill business, a large supply of wind being constantly in the market and obtainable without money and without price.

Appointed.—Elias Yulee, Esq., of Washington Territory, has been appointed to be Assistant Examiner in the Patent Office, at a compensation of $1,800 per annum. Mr. Y. was formerly professor in Woodward College, Cincinnati.

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Scientific American.

NEW YORK, NOVEMBER 21, 1857.

Work for the Unemployed.

For several weeks past a sad spectacle has been witnessed in New York and other large cities—the spectacle of thousands of mechanics and working men parading the streets and assembling in the parks, out of employment, and destitute of the means of providing for themselves and their families. The recent financial crisis, which fell upon us so suddenly, has been very disastrous in its results to the industry of our country. Manufactures have been paralyzed, and no one but an eye-witness can have a conception of their complete and overwhelming prostration. We have visited some manufacturing districts, where the cheerful sounds of busy industry used to be heard in every street "from early morn till dewy eve;" now all is sad, dreary and deserted. Factories are closed, forge fires are extinguished; the hammer, the saw, the spindle and loom, are silent; and men walk about the streets with anxious, care-worn countenances, for although they have willing hearts and ready hands, there is no work for them to do; and want stares them in the face, especially as the winter is at hand, and they had entirely depended on their daily toil for their daily bread. In our largest cities these evils are more concentrated, assume the worst phases, and attain to the greatest magnitude. This has been especially felt to be the case in this city—New York—where the number of unemployed persons is greater at present than at any other period of its history. Last week, multitudes of them held meetings, at some of which violent speeches were made, and threats uttered in reference to plundering the United States Sub-Treasury in Wall street, which contains many millions in specie. These threatening exhibitions were not the expression of the mass of our unemployed people (who are peaceably disposed, and more ready to protect than attack the property of others), but the expression of some fanatics, probably, incited by evil-disposed persons, such as thieves and burglars, who, in cases of such mobs, always contrive to secure the largest share of plunder, and adroitly evade detection.

Some anxiety was felt, as to the security of property, and a call was made for the United States' soldiers for protection; but such feelings were more fanciful than sensible. The police force of our city, properly organized and handled, is perfectly capable of protecting the property of our citizens against the most violent mobs. The workingmen who are idle only want work; and, as the experience of all countries proves that times of public depression in business are prolific with crimes, the best way to provide against such is to find employment for the idle. Our city government has wisely directed its policy to secure this end, in a measure, by voting a large sum for their immediate employment on the grounds in the Central Park.

The city government is not bound by any political right to find employment for those who are out of work; but as it is the moral duty of government to provide for the poor, surely it is the most wise policy which can be pursued, to obviate the necessity of incurring vast eleemosynary expense and aid, by giving employment in the execution of public works in which all are publicly benefited. From the days of ancient Rome during her republican and despotic governments, the muncipalities of all civilized countries have been obliged to pursue this policy in such exigencies as will occur, from time to time, as long as the world lasts. In all our cities, where there are large numbers of persons out of employment at present, we recommend this policy to be immediately adopted, so far as it can possibly be done, by the municipal authorities.

As the question of unemployed labor and its wants is one of a very complicated character and of vast importance, we will take the opportunity of recurring to it on a future occasion. On reference to another article in this paper, it will be seen stated that there are signs of improvement evident in various quarters, which are certainly cheering, yet the sufferings of the unemployed in this and other cities are pressing, and, of course, they cannot subsist merely upon future hopes. Something must be done for them at once in the way of temporary support. In a few more weeks it is believed that many will be employed, and thus placed beyond the need of benevolence.

Mortality among Scientific Journals.

We apprehend that few of the readers of the SCIENTIFIC AMERICAN can be fully aware of the difficulties which attend the publication of a journal devoted to scientific and mechanical subjects. We know, from an experience of twelve years, that whoever undertakes an enterprise of this character will find his path no bed of roses. The care, the anxiety, the study, and the information required to render such a journal popular, are known only to those who have had the severe experience. One of the chief difficulties in maintaining such a journal arises from the fact that readers of scientific literature are, among the great mass of the population, very few, in comparison with those who read newspapers which require no special effort of the mind to digest their contents. Another reason is that the general news of the day interests every individual and family, while the contents of scientific periodicals embrace comparatively only a limited number of popular subjects.

That our readers may catch a glimpse of the roughness of the road over which such journals are compelled to move—if they move at all—we give the following list (drawn up from memory) of sixteen journals which have "gone under," to use a timely expression:—

New York State Mechanic, Mechanic's Mirror, Farmer and Mechanic, Scientific Mechanic, American Artisan, Mechanic's Magazine, The Mechanic, American Mechanic, Engineer's Journal, Eureka, Mirror of the Patent Office, Polytechnic Journal, Pen and Lever, Railroad Advocate, Inventor and Mechanic's Journal, American Engineer.

If there still exist any journals similar to the above, except the SCIENTIFIC AMERICAN, they are only just wearily dragging along, and will probably cease altogether by the 1st of January next. All of the above sixteen journals were commenced in periods of prosperity, and, with few exceptions, they exhibited a fair amount of ability and industry in their management.

The *Farmer and Mechanic* feebly existed through several years and finally expired. The *Mechanic's Magazine* was backed by the capital of one of the wealthiest publishing houses in New York. The *Polytechnic Journal* was in the hands of tolerably able men; and the *American Engineer*, which received its death-blow during the recent "panic," exhibited signs of considerable "gumption." All these seeming advantages, however, could not save their lives. Of those literary ephemera which every now-and-then flutter feebly over the fairy fields of science and art, then fall into the gulf of oblivion, it may be said—

"They come like shadows, so depart."

Almost every journal of this class which has appeared within the last eight or ten years, has been born with a terrible grudge against the SCIENTIFIC AMERICAN, and we have been regularly "barked at" once or twice a year by some new rival. Some of these puny periodicals have existed for one year, some for six months, and some have made only one bow to the public and then expired; and if it had been unavoidably necessary for them to pay us for the official lists of Patent Claims so often surreptitiously copied from our columns without credit, several of those journals would have died in a much shorter time.

We wish it to be understood that in alluding to the failures of the publications named in this article we do not mention the fact for the purpose of exulting over their early death, or of conveying the idea that any remarkable shrewdness in the management of the SCIENTIFIC AMERICAN has kept it alive and made it so popular among mechanics and inventors throughout the world; but in recording our observations of the catastrophes of old contemporaries, our object is to caution any lilliputian literary gladiator who may cotemplate rushing headlong into this dangerous arena.

One-idea men can never succeed in the business of scientific journalism, as many have already learned by bitter experience. So far as the SCIENTIFIC AMERICAN is concerned, we will not say that the "hard times" have not probably affected its circulation, but we can say that, in spite of the pecuniary panic that has recently convulsed the commercial world, our journal has nearly as many subscribers as at the close of the last volume, at which time the list is always largest.

Toothed Wheels.

There is scarcely a mechanical combination of any kind into which toothed or gear wheels do not more or less enter into the arrangement. Their advantages for conveying motion are so obvious and well known that it is almost an unnecessary task to recapitulate them; they are more certain than belts or straps; their motion is easy and regular, and they can be made of any size or strength. A tooth wheel is essentially a wheel having on its periphery a number of projections at equal distances apart, with corresponding indentations or spaces into which the teeth of the corresponding teeth can fit with ease. The distance from the center of one of these teeth to the center of the next is called the *pitch* of the teeth; or, in other words, the pitch is the space occupied by one tooth and one space. When the motion is not intended to be conveyed parallel to the motor or shaft which gives motion to the first, but at some angle with it, then the teeth are placed at a suitable angle with the shaft, and are called bevel wheels.

The simplest form of a toothed wheel is evidently a wheel set on an axle, a number of pegs being inserted in the periphery of the wheel, at right angles with the axle, and these fitting into the spaces between pegs placed in the rim of another wheel parallel to the shaft or axle. In constructing these teeth there are certain principles to be remembered and attended to, which we will state as briefly as we can. The first is, that gearing wheels act by direct pressure, tooth against tooth, and consequently the teeth must not be too long, or they will snap off; and, secondly, they must be of such a shape that they will meet, fit into one another and separate with ease, and yet remain in contact from the moment they meet to that in which they part, so that no pressure is lost, but a pressure is always exerted in proportion to the amount of surface in contact. On this account the shape of these teeth is of the highest importance, and to determine the proper form, many mathematicians have spent much time and labor, among whom we may honorably mention the names of Camus, Emerson, Young, and Willis. They have determined that the tooth must be thicker in the center than at either end, for there it receives the greatest amount of pressure, this through all the teeth is called the line of centers, and that if the wheel is to gear into another wheel, the sides of them should be a segment of a *cycloid*; this is the curve formed by any point of a wheel rotating along a level plane; and if the wheel is intended to gear into a rack, the *epicycloid* is the best form; an epicycloidal curve is formed by a point in a small wheel rotating around the periphery of another circle. Another good and useful curve of which to form them is the *involute*, which is constructed by fastening a pencil to a piece of string and winding it round a cylinder, then holding the point of the pencil on a piece of paper, and pulling it round so as to unwind the string.

Millwrights and machinists are generally in too great a hurry to attend to such minutiæ and they adopt a much more simple method, by drawing a number of circles until they obtain such a curve as will fit, or else swing the patterns, and cut two teeth that will gear, gradually cutting away until they obtain the desired form; and from those teeth make the remainder. Cog, gear or toothed wheels are now made on a large scale and kept in sizes, so that you have only to send the pitch and size of the wheel you want, and you will receive from the foundry or millwright's shop a wheel that will gear into the one you require.

The Mechanical Powers.

Every one knows, as a piece of school-boy acquirement, that the mechanical powers are the lever, the wheel and axle, the pulley, the inclined plane, the wedge and the screw. Very few people, however, give themselves the trouble to inquire if this classification is correct, and they may be somewhat astonished when informed that there are but two, in place of the time-honored six that have so long held an undisputed sway in the mechanical portion of all books on popular natural philosophy.

First, there is the lever; the wheel and axle and pulley are but circular levers, and their action depends on the same principles as a straight bar having a weight, a power and a fulcrum. In both there is a weight to be raised, a power to do it, and the fulcrum is the axle, or turning point of the whole. They might well be called continuous levers.

Second, we have the inclined plane, of which the wedge is but a modification, in fact, a double inclined plane, and the screw a spiral one; their power and capabilities are calculated from nearly the same data, and the methods by which each of them attains its desired end is in principle precisely the same.

A Word about the Times.

We are glad to announce that amidst the general gloom which has pervaded all classes of the community for some weeks past, there are now visible some signs of improvement in various quarters. It is an acknowledged fact that for all practical purposes there is an abundance of money in the country; and now that the panic has spent its full force, those who have been "hoarding" are beginning to come out, and are looking around for some safe opportunity to invest it. The New York city banks hold nearly $20,000,000 in specie, which is a much larger sum than they have had for many months; stocks have rapidly advanced on the exchange; several large manufacturing establishments are beginning to renew their operations; and the great grain crop of the West is flowing to the seaboard. These are all cheering signs, and we hope soon to see the general interests of industry once more in a healthy and prosperous condition. Let us all take courage, for "the good time *is* coming."

The Adriatic.

The steamship *Adriatic* has been, it is hoped, satisfactorily completed. She went down the bay on her first trial trip on Friday, the 13th inst. The morning was rainy, and this first spontaneous movement of the magnificent vessel attracted little attention, but the machinery appeared to work in every respect successfully. Much attention has been called to this ship by her large size, and the alterations which have been necessary in the construction of her engines. We intend to keep our readers informed of her progress until complete success has been established.

ANOTHER COMET.—A faint telescopic comet was discovered on the evening of the 12th inst., at the Observatory of Harvard College, by Mr. Horace P. Tuttle, near the star Theta Draconis. This comet is the sixth which has appeared in 1857. We believe it is the thirteenth or fourteenth discovered at this observatory, before any information had been received of their having been seen elsewhere.

The steamship *Arabia*, which arrived at this port on the morning of the 13th, brought the welcome news that Delhi was in the possession of the British.

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Closing of the Fair of the American Institute.

On Friday, November 6th, the Crystal Palace, wherein the above-named Fair has been held, was officially closed, and the exhibition terminated. In the afternoon of that day the prizes were awarded by the managing committee, and the distribution was followed by a grand concert in the evening.

As a Fair, the one just closed has had many drawbacks—the bad weather, hardness of the times, &c.; but taking it altogether, we are inclined to place it among the most, if not actually the most, successful exhibitions ever held in this city. The Palace is still open to the public, and for the depositing of machinery; but in every respect it is a desert compared to what it has been, for visitors, managing officers, reporters and exhibitors, have all retired to recuperate their energies and improve their talents, so that when the next Fair arrives, they may enter on their duties with freshness and renewed vigor.

We now publish an accurate list of the gold and silver medals that have been awarded to exhibitors in the Machinery Department, as they will, doubtless, possess the greatest amount of interest to our readers :—

I. RAILROAD MACHINERY AND FIXTURES.

Fowler M. Ray, 102 Broadway, New York: "Elliptic and Rubber Spring."—Small silver medal.
L. B. Tyng, Jersey City, N. J.: "Chilled Locomotive Tire."—Small silver medal.
J. H. Swan, 322 Fourth ave., New York: "Car Seats and Reclining Chair."—Small silver medal.
Ward & Sinclair, 102 Broadway, New York: "Bailey's Car Seat."—Small silver medal.
Horace Boardman, 181 East 13th street, New York: "Coal-burning Locomotive Boilers."—Small silver medal.

II. LATHES, PLANERS, BORING AND SLOTTING MACHINES, BOLT CUTTERS, DIVIDING AND CUTTING ENGINES FOR IRON, AND MODELS AND DRAWINGS OF MACHINES FOR THE SAME.

Newark Machine Co., Newark, N. J.: "Universal Slabbing Machine."—Large silver medal.
Milo Peck, New Haven, Conn.: "Drop Press and Atmospheric Hammer."—Large silver medal.
Snow, Brooks & Co., Meriden, Conn.: "Punch Presses."—Small silver medal.

III. MACHINES FOR WORKING WOOD, AND MODELS AND DRAWINGS FOR THE SAME.

McNish & Butler, Lowell, Mass.: "Stave Machine."—Large silver medal.
William V. Studdiford, 49 Wall st., New York: "Barrel Machinery," (Livermore's patent).—Small silver medal.
H. B. Smith, Lowell, Mass.: "Power Mortising Machine."—Large silver medal.
Lysander Wright, Newark, N. J.: "Scroll Saw."—Small silver medal.
A. D. Waymoth, Fitchburgh, Mass.: "Spool Lathe."—Large silver medal.
J. A. Woodbury, Winchester, Mass.: "Planing Machine."—Small gold medal.
Jones & Crowell, 239 Broadway, New York: "Wood Planer."—Large silver medal.

IV. STEAM PUMPS, GAGES, VALVES, LUBRICATORS, &c.

Roberts & Crumbie, 72 Water st., Brooklyn, N. Y.: "Steam Pump."—Large silver medal.
Guild, Garrison & Co., Williamsburgh, N. Y.: "Steam Pump."—Small silver medal.
Taylor, Campbell & Co., Brooklyn, N. Y.: "Safety Feed Pump."—Small silver medal.
John Sutton, 114 Cannon st., New York: "Oil Cups for Journals."—Small silver medal.
Forest Agricultural Steam Engine Co., Brooklyn, N. Y.: "Portable Steam Cross-cut Saws" and "Portable Farm Engine."—Small gold medal.

V. HYDRAULICS.

A. Tower, 124 Broadway, New York: "Power and Hand Pump."—Large silver medal.
C. & G. M. Woodward, 77 Beekman st., New York: "Steam Pump."—Small silver medal.
John Patton & Co., 61 Fulton st., New York: "Carpenter's Rotary Pump."—Small silver medal.
William D. Andrews, 414 Water st., New York: "Anti-friction Centrifugal Pump."—Large silver medal.
Thomas Hanson, 137 Third ave., New York: "Pump and Pressure Machine and Hydraulic Rams."—Small silver medal.
Sawyer & Carr, 3 Bedford st., New York: "Water Closets."—Small silver medal.
Sawyer & Carr, 3 Bedford st., New York: "Cut-off for Kitchen Boilers."—Small silver medal.
McNab, Carr & Co., 95 and 133 Mercer st., New York: "Superior Valve Couplings, Cocks, &c."—Small silver medal.
Strickland & Hildreth, Worcester, Mass.: "Globe Valve Cocks."—Small silver medal.
James H. Wright, 835 Broadway, New York: "Water Filters."—Small silver medal.
William W. Ayers, Worcester, Mass.: "Cylindrical Filter."—Small silver medal.
Perrini & Boyle, 51 Pitt st., New York: "Hydrant."—Small silver medal.
John Johnson, 111 East 18th st., New York: "Water Governor."—Small silver medal.

VI. PRINTING PRESSES.

Lowe Printing Press Co., Boston, Mass.: "Conical Printing Presses."—Small silver medal.
A. & B. Newbury, Windham Center, N. Y.: "Reciprocating Cylinder Printing Press."—Small silver medal.

VII. GRIST AND SAW MILLS.

[In this division no gold or silver medals were awarded.]

VIII. SEWING MACHINES.

I. M. Singer & Co., 458 Broadway, New York: "Embroidery Sewing Machine."—Small silver medal.
Watson, Wooster & Co., 449 Broadway, New York: "Single Thread Family Sewing Machine."—Small silver medal.

IX. MISCELLANEOUS NEW INVENTIONS.

W. McKenzie, New Jersey: "Patent Blower."—Large silver medal.
Seyfert, McManus & Co., Reading, Pa.: "Steam Boiler Flues."—Small gold medal.
Arad Woodworth, (3d), Boston, Mass.: "Cordage Machinery."—Small gold medal.
Thomas G. Boone, Brooklyn, New York: "Rope Machine."—Small silver medal.
W. R. Dutcher, Lansingburgh, N. Y.: "Rope and Cordage Machinery."—Small silver medal.
Z. Butt, Lincolnton, N. C.: "Excavator."—Small silver medal.
Kean & Co., Worcester, Mass.: "Bookbinders' Shears."—Small silver medal.
Eames & Hathaway, Milford, Mass.: "Machine for Cutting Sole Leather" and "Boot-treeing Machine."—Small silver medal.
A. Bernard & Co., 51 Dye st., New York: "Patent Bakers' Oven."—Large silver medal.

X. GAS, SODA WATER MACHINES AND ELECTRIC MACHINERY.

W. W. Batchelder, 34 West 34th st., New York: "Argand Gas Burner."—Small silver medal.

XI. COTTON MACHINERY.

George G. Henry, Mobile, Ala.: "Machinery for Manufacturing Yarns for Plantation use."—Large silver medal.
Union Roller Cotton Gin Company, 6 Liberty street, New York: "Sea Island Cotton Gin."—Small gold medal.
Benjamin & Reynolds, Stockport, N. Y.: "Improvement in Weaving Cotton Goods," (Reynold's patent).—Small gold medal.

XII. WOOLEN MACHINERY.

R. Kitson, Lowell, Mass.: "Wool Picker."—Large silver medal.
B. T. Nichols, Newark, N. J.: "Picce-hosiery Machine."—Large silver medal.
Frederick Schott, 78 Hunter st., Brooklyn, N. Y.: "Power or Hand Knitting Machines."—Small silver medal.

MECHANICAL DRAWINGS.

Theodore Krausch, Susquehanna Station, Pa.: "Mechanical Drawing."—Small silver medal.
Samuel Stanton, Newburg, N. Y.: "Drawing of a Marine Engine."—Small silver medal.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

Kline's Patent Compass Manufactory Co., 92 Wall and 301 Pearl st., New York: "Compasses to overcome local attraction on ship-board."—Small gold medal.
H. W. Hunter, 1 Chambers st., New York: "Surveying Instruments."—Small silver medal.

Descriptive Index to Chemical Patents.

An Index to the chemical patents issued by the United States Patent Office during the year 1853. Prepared for the SCIENTIFIC AMERICAN by Dr. D. Breed, solicitor of patents, Washington, D. C. Continued from the SCIENTIFIC AMERICAN of October 17, 1857:—

Alcohol—Separated from water by pressure of a high column of mixture: B. F. Grenough, December 20.

Alcohol—Use of manganates and permanganates existing in soluble compounds in purification of: Luther Atwood, August 23.

Chromic Iron Ore—Reduced by carbonaceous materials, and iron removed by sulphuric acid; for making chromates: J. C. Booth, July 19.

Fats—Treatment with alkalies and sulphurous acid, to harden for candles: Monnier and Boutigny, February 8.

Filters—Composition of animal charcoal, glass and starch: Wm. H. Jennison, May 31.

Glue—Scraps preserved by washing in —— of lime, and laying inclined to drain and dry; before using wash, using some sulphuric acid: David A. Janes, July 26.

Gutta Percha—Coating metals with: Charles Goodyear, October 11.

Gutta Percha—Use of sand, pulverized soapstone or plaster, for molds to preserve shape of modeled articles during vulcanization: Charles Goodyear, April 12.

India Rubber—Smooth surface produced on vulcanized, by use of oil on surface or on metallic plates or molds: L. Otto P. Meyer, December 20.

India Rubber—Milk from tree treated with aqua ammonia, to preserve in liquid state: Henry L. Norris, July 26.

India Rubber—Fabrics made from mixture of pulverized and vulcanized rubber with rubber of commerce: Richard Solis, February 1.

Ink—Use of "colophonic tar" as ingredient: Samuel H. Turner, September 6.

Oil—Rosin; treated with bases and then distilled inodorous: Samuel L. Dana, April 19.

Oil—Derived from coal tar by repeated distillation and treatment with caustic soda and with sulphuric acid; boils at 450° to 475° Fah. Also the use of, to liquify concrete oils: Luther Atwood, March 29.

Oil—Steam at red heat passed through coal under distillation. 2. Fractional distillation of first product. 3. Purification of eupione and paraffine by sulphuric acid, chromate of potash, peroxyd of manganese, caustic soda, decantation, filtration, re-distillation, pressing, &c.: William Brown, September 27.

Oil—Rosin; purified by mingling with steam during distillation: Madison Page, May 24.

Painting—Treatment of cloth with sulphomuriate of tin, (mordant), then with chlorine, preparatory to painting different colors and figures: Leon Garosson, June 7.

Paint—Graphite (black lead), charcoal, tallow and gas tar, for preventing corrosion or incrustation in steam boilers: Charles F. Sibbald, May 10.

Paper—Use of concentrated solution of hypochlorite of alumina, for separating fibers of straw: Coupier and Mellier, August 2. France, May 7, 1851.

Potash—Preparation for dyeing, made by treating manganese and common salt with dilute sulphuric acid, then heating to expel chlorine, which is passed into a solution of prussiate of potash: Frederick G. Vettercke, July 26.

Stone—Artificial; use of silex, alumina and salt: Hornig and Suess, June 7.

Soap—Use of sal ammoniac with wheat flour, potatoes, borax, sal soda, "meen fun" or satin white, and fuller's earth: Ira F. Payson, December 6.

Type—Stereotype; use of shellac mixed with tar and sand, as type metal. Also use of clay mixed with gum arabic, beeswax, stearine, tallow, oil for molds for engraving, (apparatus): Josiah Warren, re-issued July 26. Patented April 25, 1846.

Veneers—Sawdust cemented with mixture of lime and curd of milk; earth or fragments of minerals cemented in same way: Carl L. Gran, April 26.

Wool—Treated with mixture of oil (2-3) and alcohol (1-3) for cleansing: Hubbell and Barrett, June 7.

Zinc—Coated with lead; fused zinc poured upon fused lead, to form a thick plate, which is afterwards rolled out: E. Morewood, June 28.

The Rate at which Thought Travels.

Who but a Frenchman would ever have thought of trying to measure the rate at which our ideas flow? One has thought of it, and three gentlemen of France have experimented and discovered—not exactly the rate at which our ideas travel, for that is infinite—but the time which elapses between the moment we think of a thing and the moment our muscles are affected to do it; or, in other words, what time it takes for the brain to exert its influence on the senses, and the senses on the brain. We compile the following information from a French journal:—

If a cylinder divided into 360 degrees be caused to rotate 1,000 times in a second, it is evident that the passage of one of those degrees before a given point is equal to the 1-360,000th part of a second; this may be divided by a microscope so that a period of time equaling the ten millionth, or even the one hundred millionth part of a second may be measured. By this arrangement it is possible to measure the rate of nervous impulse. Suppose an electric shock be given to the arm, it produces a sensation and a contraction of the muscles; then by noting the interval of time between the shock and the contraction, the time occupied by the action of the brain to produce the contraction, however quick, will be ascertained. By trying this experiment on various parts of the body, the amount of sensibility of the different leading muscles may be determined.

M. Helmholz, a Swiss gentleman, has made some very interesting experiments, with the utmost care, and has arrived at the following results, which we copy from Professor Silliman's *American Journal of Science*:—

Sensations are transmitted to the brain at a rapidity of about 180 feet *per second*, or at one-fifth the rate of sound; and this is nearly the same in all individuals.

The brain requires *one-tenth of a second* to transmit its orders to the nerves which preside over voluntary motion; but this amount varies much in different individuals, and in the same individual at different times, according to the disposition or condition at the time, and is more regular, the more sustained the attention.

The time required to transmit an order to the muscles by the motor nerves is nearly the same as that required by the nerves of sensation to pass a sensation; moreover, it passes nearly one-hundredth of a second before the muscles are put in motion.

The whole operation requires $1\frac{1}{4}$ to 2 tenths of a second. Consequently, when we speak of an active, ardent mind, or of one that is slow, cold or apathetic, it is not a mere figure of rhetoric, but an absolute and certain fact that such a distinction, with varying gradations, really exists.

Vibration around Water Dams.

A correspondent in Vermont writes to us stating the following case:—

"There is in this place a new dam 65 feet long, nearly level on the top, with a smooth edge; and when the water flows over it in a thin and unbroken sheet, there is always a vibration of the water from the bottom to the top of the dam, and back in the pond for three or four feet; it also causes the windows of houses about the falls to jar and rattle. What is the cause of it?"

The vibration is caused by the water falling on to the ground from the dam or into the lower water; and it will, of course, affect all bodies in its neighborhood that are capable of moving. However evenly the water may pass over the dam, it will be uneven in its descent, and so cause the substance on which it falls to vibrate, and by concussion affect the dam itself.—EDS.

Musk.

This well-known scent is imported from China, Bengal, and Russia. It has a bitterish and somewhat acid taste, and in color resembles dried blood. This scent is obtained from the musk deer, and possesses a most penetrating and diffusive odor, rather agreeable when feeble, but when concentrated it is decidedly offensive; so diffusive is its power that a few grains will scent a room for years, and it never seems to fade in strength. Tonquin musk is the most esteemed. Pod musk is the natural bag containing the musk, and each one weighs about six drachms having in each about eight scruples of pure musk. It is generally more or less adulterated, but the adulterations are easily detected under the microscope or by analysis,

Extensive Iron Government Building.

The owners of the Trenton Locomotive Works have been awarded the contract for building a marine hospital for the United States government at New Orleans, the material to be of iron. Its length is to be three hundred and forty-eight feet, with wings each of two hundred and four feet. The main building will be three stories high and the wings two stories; both the main building and the wings will be surmounted with domes. A verandah, two stories high, will extend around the entire structure. The exterior walls, roof and verandahs, are to be entirely of iron. That the walls may be rendered non-conductors of heat, unburnt prepared clay will be used for the filling. The work is done at Trenton.—*Philadelphia Ledger.*

Leprosy in Australia.

It is asserted that this frightful disease has made its appearance among the Chinese in Australia, and that it is likely to extend to Europeans. A letter from a gold digger contains the following:—

"Three days ago the troopers turned the Chinese out of their camp, but allowed them to take their tents, and then set fire to the rest. There are lots of them dying with the leprosy, and their camp was a regular nuisance. A carrier got $30 for burying one of them; he took the disease from the dead man, and the carrier is now dead. The doctor had the camp set fire to, as the stench used to come into the township, although the camp was three-quarters of a mile away."

Philadelphia.

The Quaker City has at last determined to try for herself the experiment which has been so successful here and in other places, namely, a city passenger railroad. It is to run along Sixth street, and men are now at work laying down the tracks, much to the disgust of some, and approbation of the remainder of the inhabitants. The quiet Philadelphians are much astonished at the proceeding, and their newspapers say that hundreds of spectators are there at all hours of the day, looking earnestly on. Should this one prove successful, many others are to be laid. The cars will prove a great convenience to the inhabitants and business-men living in the suburbs and doing business in the city.

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Correspondents

F. D., of N. Y.—The process of making patent leather is a complicated one. The varnish consists of one pound of ivory black, ten pounds thick copal varnish, twenty pounds of linseed drying oil, and twenty pounds of turpentine. Indelible ink may be made by dissolving 1 ½ ounces of nitrate of silver in 5 ½ ounces of strong ammonia and 12 ounces of gum mucilage. It must be kept in the dark.

J. H. H., of Wis.—The best method you can pursue is to wash your level with weak acetic acid applied with a brush; let it dry on, and repeat until you have the shade you want, then lacquer with any varnish you think fit. We are perfectly cognizant of our right to use this column in any way we think fit, and we do so by throwing it open to *all* our correspondents.

J. T. P., of Vt.—To make copal varnish, take hard copal, 300 parts; drying linseed or nut oil, 125 to 250 parts; and oil of turpentine, 500 parts. First melt the copal, then add the drying oil, heated; let them cool a little, and add the turpentine. Great care must be taken that the turpentine does not inflame.

J. H. M., of N. Y.—A suitable engraving to illustrate your invention would cost $15.

D. B. C., of Ohio.—We will receive your State bank bills at par for government fees, as well as for our own; but we would rather have you send us a draft on New York. The reason for this you can appreciate, as you are aware that we are obliged to pay the government fee in gold.

R. F. B., of Md.—We have no data from which to obtain a calculation of the strength of hollow globes of wrought iron.

L. H. M., of R. I.—James Harrison, Jr., of this city, has a patent for a machine for making spiralsprings for furniture use.

W. H. B., of Pa.—You will find an article on the subject you refer to, in this week's paper; and you may obtain further information by consulting Scott's Engineer's Assistant.

M. A. K., of Ohio.—You will find your question answered in that to another correspondent—B. A. L., of Conn., in No. 9 of the present volume.

C. G. M., of N. J.—We do not know where you can get a machine for making shoe pegs. They are manufactured in the eastern States, but just where, we are unable to state.

H. H., of Mo.—There is no power in the Patent Office to renew a patent after it has once expired; therefore, if you have neglected to ask for the extension until now, there is no chance for you, unless by special act of Congress. Very poor encouragement.

C. C., of Pa.—Please to send us all the facts in regard to your rejected case. We are inclined to think that by a vigorous prosecution a patent can be obtained. In order to put the case properly into our hands, you will need to revoke the power of attorney given to your former agent, and confer it upon us. Through our Branch Office at Washington we are prosecuting rejected cases with great success.

W. C. J., of Kenwood.—Smith Beers, of Naugatuck, Conn., has a patent for an odometer, which we believe to be a good one.

E. G., of ——.—Your explanation of the phenomena described by T. McN., of Ill., about the water in a tin dipper not freezing, while the water contained in the bucket in which it was immersed did, is incorrect, because you assume that the dipper and its contained water sunk in the bucket; if we understood our correspondent's letter, it did not. You will find our explanation under his query; and we should like to know your reason for objecting to that explanation.

P. S., of Pa.—The best cement for houses is undoubtedly, the so-called Roman cement, which, we believe, can be procured from any dealer in building materials.

D. W. J., of Ohio.—The mineral which you have found in your locality is heavy spar, or sulphate of baryta. When made artificially (by precipitating baryta from its solution by sulphuric acid), it is much used for paint. As its name implies, it is very heavy, having a specific gravity of about 4·4. At a very high temperature it fuses into a beautiful white enamel.

H. J. F., of Ind.—Your chain propeller for boats is one of the oldest known inventions for this purpose. It has neither novelty nor utility to recommend it.

E. J. N., of Md.—Just at this time we have no patent law pamphlets on hand. They do not contain the form of power of attorney for the sale of patents. The form in general use will answer your purpose. Faraday's Lectures on Electricity will meet your wants.

G. E. D., of Pa.—We are very glad to learn that you intend to canvas for subscribers, in competition for the prizes we offer. There is a good chance to get spending money in this manner, and if you persevere you cannot help but succeed. We shall promptly pay over the cash on the 1st of January next. Bear in mind that we are able to supply all the back numbers from the beginning of this volume. Sample numbers sent free by mail.

F. S., of Va.—We will notice your communication next week. It came a little too late to receive such attention as we wished to bestow upon it. The sugar sample seems to be very good.

C. J., of N. Y.—Such a device as you claim is not new. By reference to No. 2, this Vol., Scientific American, you will find the claim of an extension gas tube, which fully covers yours. If you have delayed your application unnecessarily, it is a misfortune, as you cannot now succeed without a troublesome interference. Delays are dangerous.

F. M., of Ind.—The advantage of feeding furnaces with hot air is very great, as you save the amount of fuel necessary to heat the air up to the required heat; and it also enters into the furnace hot enough to burn immediately. It takes no more fuel, as it may be warmed by the waste gases from the furnace.

P. B. J., of Ill.—The vine will grow well in your State, and some excellent varieties of catawba have already been made there. We understand that the vine culture has been commenced in the environs of Peoria and Nauvoo, and has been very successful.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, November 14, 1857:—

H. A. S., of Vt., $25; D. G., of Pa., $30; A. B. C., of Ga., $30; L. K., of Ohio, $46; A. J. G., of Mass., $25; E. H. T., of N. Y., $30; N. A., of Conn., $60; A. M., of N. Y., $30; D. E. of Ohio, $30; J. G., Sen., of R. I., $25; W. R. M., of Ohio, $55; D. W., of N. Y., $30; W. A. F., of Conn., $30; D. H., of Ky., $55; H. T. S., of Mich., $35; D. B., of R. I., $60; N. R. A., of N. Y., $30; D. & B., of N. J., $55; H. H., of N. Y., $25; F. O. D., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, November 14, 1857:—

F. O. D., of N. Y.; A. J. G., of Mass.; C. R., of N. Y.; H. A. S., of Vt.; H. H., of N. Y.; D. & B., of N. J.

Literary Notices.

Muspratt's Chemistry—G. B. Russell and Bros., 290 Broadway, New York. This work is gradually progressing, and although it has already arrived at Part 32, it has only begun to treat of "Glass." It will be voluminous in form, and no doubt perfect of its kind when complete; but we are afraid that by the time it arrives at Z, much of the matter classified under A will be old and require to be re-written.

The Atlantic Monthly is the title of a new magazine just commenced by the eminent publishing house of Phillips, Sampson & Co., of Boston, Mass. The first number contains ably written articles, superior, in fact, to the ordinary run of contributions to magazine literature. In reference to the merits of particular articles every reader must judge for himself.

The Westminster Review, for October, (American reprint,) published by Leonard Scott & Co., New York, contains a very good article on the "History of Civilization in England," and many others, one of which is a severe and just criticism of Mrs. Browning's new poem, "Aurora Leigh."

The Eclectic Medical Journal—R. S. Newton, M. D., Cincinnati. The November number contains an excellent paper by Professor G. W. L. Bickley on "Female Medical Colleges," and much interesting matter on the medical sciences.

TO OUR SUBSCRIBERS.

Give Intelligible Directions.—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the Post Office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the Post Office at which they wish to receive their paper, and the State in which the Post Office is located.

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Subscribers to the Scientific American who fail to receive their papers regularly, will oblige the publishers by stating their complaints in writing. Those who may have missed certain numbers can usually have them supplied by addressing a note to the office of publication.

Every Subscriber would do well to try and get one or more of his neighbors to send their names with his own, even if he has no wish to avail himself of our club rates. The larger the package of papers sent to one address, or the same Post Office, the greater is the certainty of getting the paper regularly. A single paper is sometimes mislaid or overlooked in sorting the mails at some one of the intermediate post offices through which it has to pass; while, on the contrary, we have noticed that a large package seldom fails to reach its proper destination.

TERMS OF ADVERTISING.

Twenty-five cents per line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

*** All advertisements must be paid for before inserting.

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Yours, very truly, CHAS. MASON.
August 14, 1857.

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Names of subscribers can be sent in at different times and from different Post Offices. The cash will be paid to the orders of the successful competitors immediately after the 1st of January, 1858. Circulars giving further particulars may be had gratis by sending to the publication office, 128 Fulton street.

We hope our friends in the country will avail themselves of the above liberal offer, and while they oblige us they will be benefited to a far greater extent themselves. MUNN & CO., Publishers.

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NEW HAVEN MANUFACTURING CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

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Science and Art.

Patent Leather.

In the manufacture of patent leather there are two distinct operations—the first being the preparation of the leather for the reception of the varnish, and the second, coating the leather with brilliant and transparent varnishes.

The first thing is the preparation of the linseed or drying oil, which is done as follows:—Five gallons of linseed oil are boiled with four pounds and a few ounces of white lead, and an equal amount of litharge, (each in a state of fine division), until it becomes of the consistence of a syrup. This mixture is then united with an ochre or chalk, according to the quality of the skins that are to be treated, and it is evenly spread on both sides of the leather, and well rubbed in. Three very thin coats are applied, allowing each to dry before the other is put on, and the surface is ground down with pumice stone. This process of laying on the drying oil and rubbing down is continued until a sufficient quantity has been laid on to prevent the varnish from penetrating the leather.

To the presence of so much lead in patent leather we think we may ascribe the prevalence of tender feet, corns and bunions, among those who are in the habit of wearing boots and shoes of this material, as it has a very drying and drawing action; and persons who so indulge, look shiny about the feet at the expense of their health. They had better exert themselves a little, by using paste blacking, and thus be able to walk in comfort and with ease.

The leather being thus prepared, a mixture of the linseed oil and lead with fine ivory black is made, and a little turpentine added, to make it flow easily; this is laid on by means of a soft brush, and five or six coats are applied. This gives the surface of the leather a rich black, shining, pliable surface, over which, when dry, the varnish may be applied.

The varnish is composed of one pound of either asphalte, Prussian blue, or fine ivory black, ten pounds of thick copal varnish, twenty pounds of the linseed oil prepared as before described, (by boiling with litharge and lead), and twenty pounds of spirits of turpentine. The various tints are given by the various coloring materials added; thus, asphalte gives a reddish color, Prussian blue a greenish blue metallic tint, and the ivory black, which is the most common, a beautiful and brilliant black. The chief uses for this leather are the manufacture of boots and shoes, and the aprons and fittings of wagons and carriages.

Bleaching Fibrous Materials.

An invention for this purpose has been lately patented in England; as it is of some importance we give the full particulars:—

The plants or fibres to be acted upon are placed in large cisterns, boiling caustic and other lyes—which may have been previously used—are added; and should they not be sufficiently strong, the inventor introduces hot water saturated with quick lime, and thus obtains caustic retting. These cisterns may be kept heated by a jet of steam. Three, four, or five days, according to the plant or fibrous substance operated upon, will generally be found sufficient to bring it to a good state of retting, and for being passed through a breaking or decorticating machine, in order to open up the fibers and separate foreign matters from them. The plants or fibers are fed on to an endless belt, which delivers them on to a shoot, from whence they fall between a hollow semicircular stationary plate, smooth, toothed, or fluted, and a rotating drum with a fluted or roughened surface. After getting out of the action of the drum, the fibers are received into a trough at the bottom of the machine, and are washed in clear water. The fibers being now deprived of the greater part of the gum and resin, and other foreign matters adhering to them, and having also received a commencement of disintegration and cleaning, the lye which is about to be explained is intended to remove the remainder of these substances, and to prepare the complete separation of the filaments from each other, and to commence the decoloration of these filaments which the washing, after coming from the barking machine, only prepared. For the next operation a rotating closed boiler is preferred, but a closed wooden or metal vessel may be used. The vessel is charged with the barked and washed filaments. A sufficient quantity of water is introduced, so that when boiling, the matters shall be covered by it; or if a rotating boiler is used, less water will be needed than for a stationary. For every 200 pounds of filamentous matters, add in the boiler or vessel 2 lbs. of subcarbonate of soda crystallized, and eight or ten quarts of liquid chloride of lime at 2° to every 100 quarts of pure water. When the fibers have been exposed to the action of these agents for a time, varying with the nature of the material under treatment, they are removed to a double acting washing, opening, and separating machine. This machine is fed with clear cold water. It is divided lengthwise through the center, and at opposite ends, and on opposite sides, there are two inclined fluted metal surfaces, the faces of which are armed with blades; and working towards or against these blades are other blades projecting from a cylinder or drum, to which rotary motion is communicated. In the machine there are also placed two revolving drums, to which rotary motion is also communicated. The fibrous substances are continuously subjected to the action of the armed cylinders and plates, and to the action of the washing drums. When sufficiently washed (which experience will readily dictate) the quantity of water is diminished in the machine, and the bleaching is commenced by introducing some of the bleaching agents set forth in a specification filed by the applicant, December, 1856. After a certain time, these bleaching agents are drawn off, cold water is introduced, and the fibers are subjected to another washing. When washed they are removed to or into another vessel, where they receive their final bleaching. In this vessel agitation is kept up by means of a paddle wheel, to which slow rotary motion is communicated. After the bleaching has been effected, the bleaching agents are drawn off, clear water introduced, and washing drums extending across the machine are set in motion to finally wash the fibrous matters.

Natural Pyramids.

The Sonora *Journal* gives an account of a very singular ledge of rocks which has recently been discovered in Petaluma in California. It is composed of regular prismatic columns, inclined but a few degrees from the perpendicular toward the center of the hill. The columns generally have five sides, and are usually about twenty inches in thickness, divided into two blocks varying from one to four feet in length, which are so closely jointed and so firmly cemented together that it is quite difficult to separate them. The columns are also bound to each other by a layer of grayish colored cement, about an inch in thickness. The rock is very hard, and of a dark color, and belongs to that class of rocks denominated basalt by geologists. The whole ledge presents the appearance of a solid structure of masonry, reared, like the Egyptian Pyramids, to perpetuate the works and memory of man, in defiance of the flight of ages. So abundant, indeed, are the appearances of design, that we are not surprised that many persons have unhesitatingly pronounced it the work of art. There is abundant evidence, however, that precludes the possibility of such being the case. This columnar structure of rock is not unfrequent. It is seen along the margin of Snake River, and in the passage of the Columbia River through the Cascade Mountains, perpendicular walls of this columnar structure are often seen rising to the hight of forty or fifty feet.

The rocks are easily quarried and brought to town, but the greatest advantage of all is their thorough adaptability to the construction of fire-proof buildings—neither fire or water affecting them in the least. We saw a chip from one of the rocks subjected to fire until it became heated to a bright red color, after which it was immediately thrown into cold water. No change whatever from its original appearance could be perceived.

Daguerreotypes by Lightning.

A country woman recently arrived in Paris from the department of Seine-et-Marne, who was, a short time since, watching a cow in an open field, when a violent storm arose. She took refuge under a tree, which, at the instant, was struck by lightning; the cow was killed, and the woman was felled to the earth senseless, where she was soon after found, the storm having ceased with the flash which felled her. Upon removing her clothing, the exact image of the cow killed by her side was found distinctly impressed upon her bosom.

This curious phenomenon is not without precedent. Dr. Franklin mentions the case of a man who was standing in the door of a house in a thunderstorm, and was looking at a tree directly before him when it was struck by lightning. On the man's breast was left a perfect daguerreotype of the tree.

In September, 1825, the brigantine *Il Buon-Servo* was anchored in the Armiro bay, at the entrance of the Adriatic sea, where she was struck by lightning. In obedience to a superstition, the Ionian sailors had attached a horse-shoe to the mizzen-mast, as a charm against evil. When the vessel was struck, a sailor who was seated by this mast was instantly killed. There were no marks or bruises upon his person, but the horse-shoe was perfectly pictured upon his back.

In 1841, a magistrate and a miller's boy were struck by lightning near a poplar tree, in one of the provinces of France; and upon the breast of each were found spots exactly resembling the leaves of the poplar.

At a meeting of the French Academy of Sciences, January 25, 1847, it was stated that a woman of Lugano, seated at a window during a storm, was suddenly shaken by some invisible power. She experienced no inconvenience from this, but afterwards discovered that a blossom, apparently torn from a tree by a lightning stroke, was completely imaged upon one of her limbs, and it remained there until her death.

A great many more similarly wonderful instances have occurred, and they are generally recorded among the curiosities of science. —*New York Post.*

Submarine Tunnel.

It is twenty-six miles across the English Channel from Dover to Calais, and it occupies, ordinarily, two hours to cross over in a little steamer. It is an uncomfortable trip, and many a strong stomach has had to give its contents to the sea, after having escaped this fate during a long ocean voyage. Considering the great rush of travel across this channel, and the discomforts of the journey, it is no wonder that modern engineering is called on to devise a better system.

The Paris *Siecle* says that the possibility of uniting England and France by means of a submarine tunnel has been practically and scientifically considered by M. Gamond, a skillful engineer. He submitted his plans to the Emperor, who was so well pleased with the project that a commission was authorized, who decided that M. Gamond is no mere dreamer. The British government have also named on their side a commission; and it is probable that, in the coming spring, French and English engineers will apply themselves to the work of vigorously examining the practicability of the project.

There have been many schemes proposed before, one of which was to lay an iron tunnel along the bottom of the channel; and another to make a gradually inclining tunnel from London, continue it under the bed of the channel, and again rise on the French side. To each of these schemes there has been some practical objection; but M. Gamond having a knowledge of these, we hope that his plan may be successful.

Warmth for the Winter.

The Newport *Mercury* gives forth a valuable suggestion, which we transcribe as being worthy of attention. After sympathizing with those who, during the coming cold weather, will feel the biting frost, and shiver through want of fire—and most heartily have they our pity and humble aid—the editor suggests the following:—

"Take a number of old newspapers, and paste them together until you have a spread large enough for the bed, and this place under an outer quilt or spread, when it will be found to act like a charm."

Surely, if this will keep a person warm in place of fire, there will be many who will follow the advice; and we have no doubt that every newspaper publisher will volunteer to do what the proposer does, namely, to give away his old newspapers for so charitable a purpose.

To Fasten Leather to Metal.—Soak the leather in a hot solution of nut galls, and apply it to the metal upon which it is to be fastened, having first given the metal a coat of glue. When dry, the leather will adhere so tight that it sooner tears than separates from the metal.

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